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June 2024 / CM334

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- **Vocoding, the 'Prismizer' effect and hard-tuning made simple**
- The best vocal processing software evaluated
- **Classic techniques explained**

INTERVIEW

KÖLSCH

The Danish DJ on gear, sampling and track-building

INTERVIEW

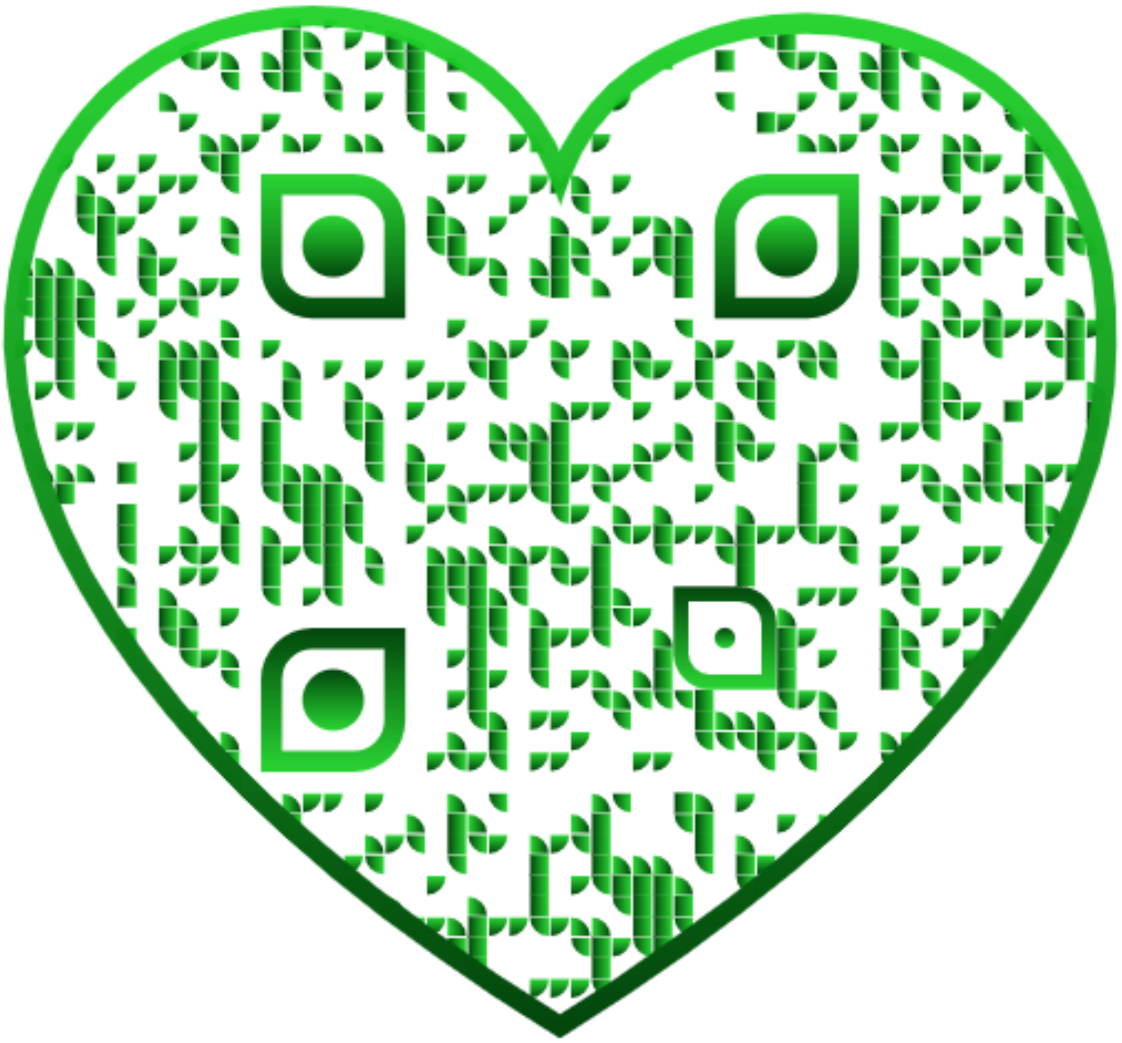
CATCHING FLIES

Breaks down his unorthodox mixing approach

INTERVIEW

MODALICS

The plugin company on their rapid success!



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See page 92 to find out how to download this issue's exclusive content

welcome

Whether you're aiming to imbue some Daft Punk-esque robotic vocal character into your projects, or if you just want to push your voice beyond what its natural timbre (and ability) is capable of producing, this issue's cover feature will arm you with the know-how to twist the human voice into quirky and captivating new forms. From classic 1970s vocoding techniques updated for software-based workflows, routes to grappling with the hard-tuned 'Prismizer' effect favoured by Bon Iver, and the latest and most malleable vocal-shaping tools that you can pick up right now, our feature lays out the science, legacy and techniques underpinning vocal processing. Gargle with some honey and lemon, clear your throat and head to p20 to begin.

Also this issue, we catch up with Danish DJ, producer and artist Kölsch on p36 and learn about the making of his captivating record *I Talk To Water*. Incorporating recordings of his late father, Kölsch has crafted a listening experience that explores longstanding grief, constructed via a mixture of software with some quirky hardware choices. Speaking of great listens, we also spend some time with Catching Flies on p60 and dig into his mixing and sampling approach. Catching Flies was kind enough to detail some of his processes in step-by-step format.

Of course, it wouldn't be an issue of *Computer Music* without an awesome free gift. This month, it comes in the shape of the full version on Inphonik's RYM2612 – a software emulation of Yamaha's iconic YM2612, found in the heart of many a retro games console. Grab your code from our download section, get it installed and head to p16 to learn more about this unique synth. Mega!

Andy Price Editor
andy.price@futurenet.com

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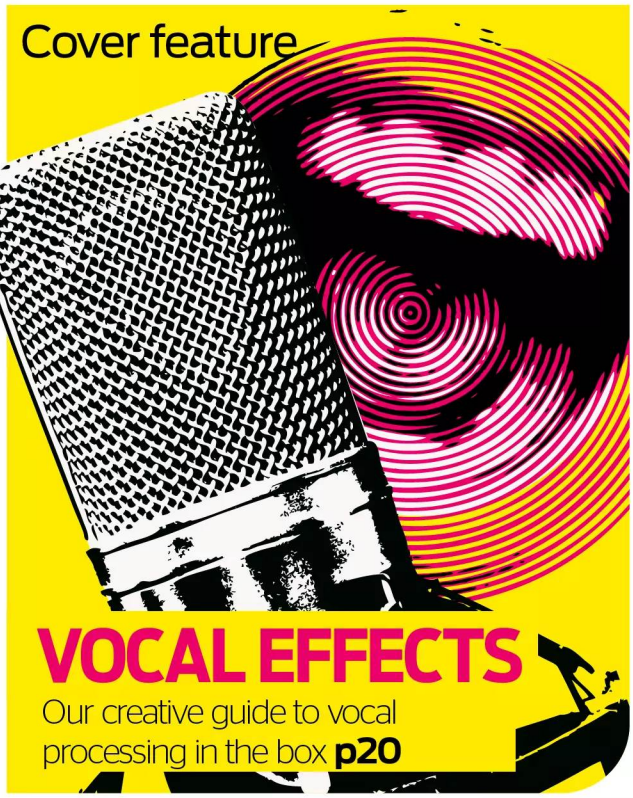

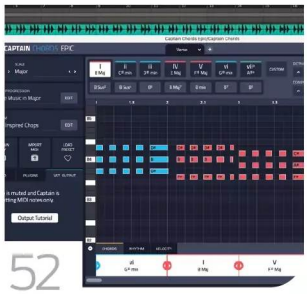

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London-based producer Catching Flies talks his latest album *Tides*, where he manipulates samples into abstract new forms while keeping a keen melodic sense firmly in his grasp

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cm/news

NEW RELEASES >COMMENT >INDUSTRY HAPPENINGS

String theory

The latest update to GForce's Virtual String Machine software brings a tapestry of classic sounds to the table

> *Computer Music* favourite GForce Software is back with another update to one of its existing synths, this time its version IV of VSM (aka Virtual String Machine), which GForce point to as being "the perfect solution for creating the sound bed of your next track".

This new update features sounds from 46 classic string machines, including models from the likes of Solina, Elka, Logan and Korg. That's significantly more than the 17 that VSM started with in version 1. With this lush assortment of authentic-sounding synth string sounds, you can create hybrid patches thanks to VSM's twin-layer architecture. You get in excess of 1,900 presets and 11.5GB-plus of sample data.

Alongside the substantial content increase, there are new additions to the interface side, too. Firstly, there's a fully scalable UI alongside all-new patch and instrument browsers that have been designed to make it easier for users to hone in on the string sound they're after via extensive tagging of those 1,900 presets. Undo, redo, copy and paste functions are on hand so you can mix, match and build atop of GForce's delicately curated starting points.

Alongside these practical enhancements, you'll find new ways to shape your sounds and to give them that stamp of old-school authenticity. There's wow and flutter to bring out the characteristic imperfections in the string sounds, as well as an alternative state-variable filter and ensemble effect. Beyond that are a host of new LFO-shaping possibilities, a rich-sounding chorus; and a matrix reverb. The poly aftertouch and velocity controls have been expanded, too, for even greater levels of expression.

VSM 4 runs on PC and Mac in VST/AU/AAX formats, and has an introductory price of £84. The regular price will be £120. Find out more and purchase/download via the GForce Software website.

gforcesoftware.com

Dawn of the chorus

Minimal Audio, maker of the fabulous Current synth and numerous effect plugins, now bring Flex Chorus to the table. Minimal say that this multi-band chorus is capable of producing everything from "massive unison effects to stereo enhancement". It offers up to 24 voices and two distinct modes based on unique algorithms: Glass mode uses a multi-stage approach to create a "clean and modern" chorus effect with resonator-like feedback, while Smooth mode is aimed at applying a classic style of smooth and deep modulation.

At an introductory price of $29, Flex looks like a solid addition to the company's growing roster. It's available for macOS and Windows in VST/VST3/AU/AAX formats.

minimal.audio

A trick and a treat

The intriguing plugin company Punk Labs has recently released OneTrick Keys, a piano synth with a crunchy, lo-fi sound. It's based on a physical modelling synth engine and offers 16-voice polyphony, and its chilled out tones can be run through six onboard effects, including reverb, flutter, bitcrushing, and saturation, alongside vinyl simulation and tape noise. It also sports 25 presets. OneTrick Keys is priced at $79 and is available in CLAP, VST3 and AU formats for macOS, Windows and Linux. More details can be found at Punk Labs' website.

punklabs.com

COMPUTER MUSIC

10 years back

Our monthly shake-of-the-head at our earlier selves' news choices...

Ten years back and we were applying a forensic eye to our audio, as the cover feature scrutinised the best visual mixing tools then-available. We plunged headfirst into the dense universe of oscilloscopes, spectrum analysers and phase metering plugins, at that point coming into their own as de rigueur 21st century mixing tools. Today, we still rely on a lot of the same principles, yet DAW-provided visual aids

We think that the last decade has yielded some future classics, but time will tell...

have become far more reliable for managing much of the frequency-carving work. For eveything else, there's iZotope's untouchable algorithmically-driven wares, not to mention our (still majestic) arsenal of frequency analysis tools within our Plugin Suite.

Also in issue 204, we were increasingly aware of the blossoming resurgence of interest in vintage synths. Jibing with the concurrent backwards-looking vinyl revival, we wondered if the revered canon would ever be supplanted: "New synths that have enough character might one day become classics in their own right, but they've got a long way to go if they want to achieve the legendary status of their forebears. Those original analogue instruments already have an assured place in history."

Well. we firmly think the last decade has seen some excellent additions to that pantheon. Will they be looked back on as classics? Time will tell...

Ten years ago, frequency analysis tools and classic synths were on our mind...

cm/sound off

How do you get musically inspired?

We asked **cm**'s audience for their methods...

JASON DONNELLY
"It's different for everyone, of course. Personally, I'm always inspired. I wake up inspired and I'm inspired all day. But there are days when I'm less inspired. Practising an instrument works. Usually listening to music from artists I like gives me that extra boost when needed. Sometimes learning a new feature in some music software gear can do it. Experimenting on gear with no expectations does the trick, too."

JEREMY WILLIAMS
"Sometimes, you just have to find one tiny little thing to do or try. Preferably something super quick and simple. Either it triggers you to keep going, or at least you've done that thing. For me, it's a lot of stuff, like, "I should try that feature on that module and send CV input to MIDI output..."

KEVN DANGER MCKINLEY
"I take chords that I like from piano pieces and extrapolate upon them."

CLIFFORD NICKERSON
"Always listen to music. Forget TV and talk radio – music. All types, everything; don't limit the genres."

REROB BLUNDELL
"I like to take time to just do some sound design on a synth and tweak some knobs or try strange patches and routing, etc. I often find myself making a sound that inspires something further."

AMANDA ALTALIBI
"Practice, practice, practice."

Ins & outs

FROM ME TO YOU
British musician James Blake has launched Vault, a new streaming platform that allows artists to make money sharing unreleased music to their fans. Blake said: "It's music direct from me to you, where no-one can gatekeep what I release to you, or delay my releases."

MOOGING ON
Last month, Moog announced it was leaving its iconic Moog Music building in Asheville, Carolina. Moog Music President Joe Richardson said that the move places Moog closer to the city centre, "where so much creativity and musical expression lives".

BLUES TR-AI-N
Developed by former employees of TikTok and Meta, Suno is an AI music-generator with scarily impressive results. In a recent demo of the text-to-music plaftorm's next iteration, it created a Delta blues piece named *Soul of the Machine*. It's a jaw-dropping listen.

A VISION OF TOMORROW
Influential YouTuber Rick Beato recently predicted what the future of streaming platforms might look like. In an interview with News 8 WROC, he foresaw that people will be able to choose from an artist's original tracks, and AI-build approximations. Eek.

IN BLOOM
We saw it in action on the floor of the NAMM show, but Oeksound's Bloom was released this month: a really rather special "adaptive tone shaper" (read: stick in on your mix bus and be astounded at the results). Our review of Bloom can be read on p72.

PUTTING IT BLUNTLY
James Blunt was none-too impressed with AI's take on his style."Either AI comes up with something very, very generic, or my lyrics are just absolutely mundane," he told Chris Difford's *I Never Thought It Would Happen* podcast. So, who's to blame?

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software instruments

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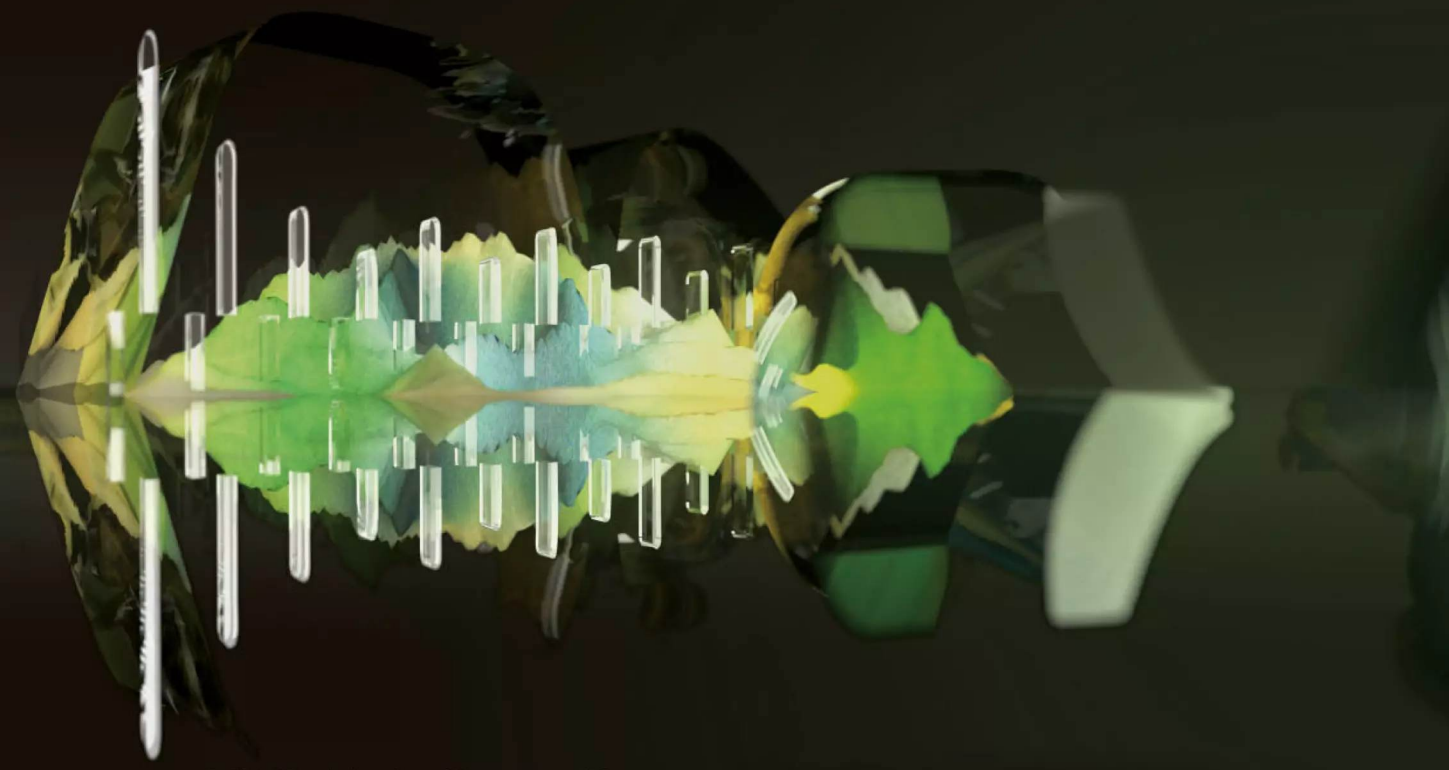


FabFilter Timeless³ is a versatile, vintage-sounding tape delay, which will fully satisfy your everyday delay needs. And with its unique effects, filters, tap patterns and unlimited modulation options, you can just as easily turn it into the ultimate sound-mangling machine!

Try it now: fabfilter.com

Modalics: A mindset for swift success

We've been fans since the quirky, pizza-inspired Beat Scholar first landed in 2022. Just over a year later, and Modalics' product stable has ballooned with further excellence. The two co-founders explain their story...

Modalics
Or Lubianiker (Co-founder)
Eyal Amir (Co-founder)

cm: Hi guys, let's start with your latest release, Time Oddity Chorus. Can you talk us through what your new chorus plugin brings to the table?
Or: "Basically, it didn't start as a chorus plugin, it started as a segment within another plugin. We developed EON-Arp which is an arpeggiator. It had a mini-synth with a fairly simple delay module. Eyal programmed this cool filter delay and we loved it. When we started getting into processing plugins, we wondered what we had already made that we like and could expand on. We ended up tweaking that delay so much and adding a bunch of features that it became this sort of modulation engine that can produce all kinds of different effects. We immediately were drawn to the whole chorus and phaser area. It's a very gratifying and distinct effect. We identified that we had got somewhere cool, then Eyal added the LFO aspect. It sort of built itself because we were excited about the project and understood that this would be a very cool first release for this engine.

"We feel like we've managed to make something that's pretty distinct in the character and voicing of the plugin. But also, I felt that most [chorus] plugins fall into the category of something that either models a specific device (like a Juno chorus, for example) or they're modulation-station, feature-packed products. We fell into a spot in the middle. Our interface is very friendly, it feels like a pedal or a device, but the engine itself is pretty robust, and you can create a lot of variation in it."

cm: How long did the development process take, and was that a usual route?
Eyal: "A lot of things that happen with us happen along the way. We develop things in a very fluid state. When we were developing MINDst Drums – one of our biggest releases to date – it had so many different effects in it, and we needed to build each one in turn. Every time we do that we think, 'oh, this sounds good' – we'll then come back and develop it further. I would throw away more complex parameters once we hit on areas that just sounded good to our ears. We do this all the time at Modalics. But, with Time Oddity Chorus as a final product, the actual development time was around two weeks – because that engine foundation had been gradually worked on. It was very quick. We did a lot of work on the UI and the presentation, but the engine and infrastructure was already built. We could move very quickly."
Or: "We actually formed Modalics because we like to work at speed; our development cycles are very intense. While Eyal is working on the engine and developing prototypes for the processing and the back-end, I iterate on the branding, the parameter ranges and the front-end product work. We do that simultaneously. We constantly throw things back and forth. I do a bit of programming on the UX/UI side and Eyal also does product work and sound design. This momentum we're able to create together is a big part of the reason why we decided to make an audio company. I don't know many two-people teams who can produce plugins in a couple of weeks. What we release are high-end, commercial plugins with copy protection and everything else you'd expect from bigger manufacturers."

cm: We first became aware of you with the amazing Beat Scholar, which completely shifted how we thought about pattern-forming and experimental beat-making.

Was that an idea that predated Modalics or did that come to life after the formation of the company?
Or: "I think the general concept of finding a more comfortable way to make complex rhythms and measures is something Eyal and I have been dealing with for years because of our lives as musicians. We've been composing all kinds of music for most of the past decade. When we came to start the company, we knew our first product should signify what we're about.

A lot of products start with 'pain points' – so you think about what is bothering you in the creative process. Solving those issues is what we want to provide. Rhythm is such a key part in all kinds of music. That was our initial step; it was the company's mission statement and our dream rhythm composer in one device. I think we hit the mark in the sense that it really kind of labelled us as the company that 'does' that kind of product."

cm: We loved the 'beat-pizza' UX idea. When thinking about the user experience side of plugin design, are you always conscious of the software being intuitive and enjoyable as well as useful?
Eyal: "Yeah, I think that's something that we spend a lot of time thinking and talking about. It's one of the more technically challenging aspects of what we're doing for sure. I think UI and interaction in general is really core. We think about the computer as an instrument – I always have. It's an extension of the piano, the guitar or whatever I'm using. What matters to me as a musician is not the sound as a result, but the interaction of how I'm getting the sound.

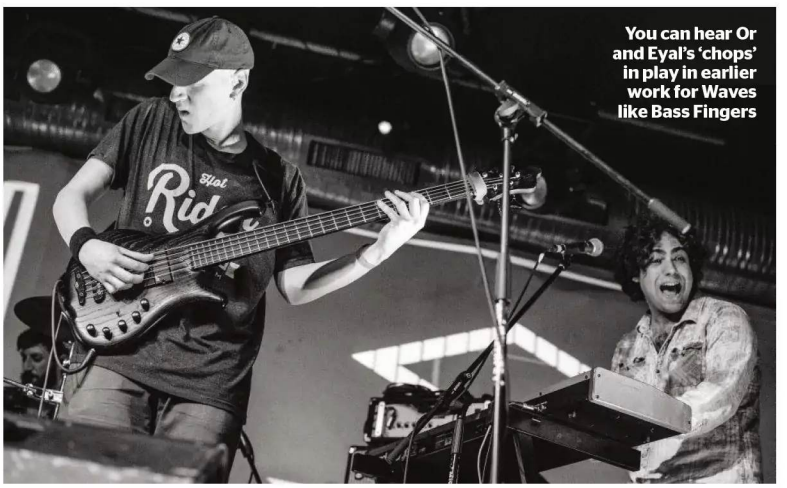
> "We have lots of ideas, there's no shortage; but the main point is the product"

"I think that's what made me fall in love with the piano originally. That's something we have a lot of discussion about. How someone might sit in front of the plugin. They start doing something and experiment with different things, that's pretty important. Beat Scholar came from the concept of having a different grid on each step. That's unique and I haven't seen it happen before. We did that because we said that people don't know what it's like to change from a quintuplet to a triplet every step – they haven't heard it and they're hard to program. It's really hard to do it in your DAW, you have to change the grid of the whole track just for the one beat. It's a complicated process for you to do. We talk a lot about making these kinds of complex processes easier, and give people feedback on things immediately."

cm: MINDst Drums really established that you're not just in-the-box software developers, you've got a penchant for capturing incredible real-world sounds and framing them within an incredible versatile drum suite. What was your ambition with that product?
Or: "That was something we actually talked about before Modalics. Eyal and I started our path in plugin development at Waves. We made Bass Fingers and Bass Slapper. We did it in the same way that we work right now. We were less experienced but we approached it as a two-person development team. What we made was a very realistic bass instrument that modelled my playing. At that point, we realised that we should probably do the same thing for drums. Our base point was that a sampler needs to be intelligent and needs to be able to reconstruct reality in a very convincing way without the user needing to go through a lot of learning. The instrument needs to give a sense of reactivity. When you put your hands on the keys, you should be pleasantly surprised. It's been brewing for a long time, so we felt that after doing several plugins that it was time for our flagship moment, that we were capable enough to produce this drum suite.

"We considered how many kits we should sample, eventually we settled on just one incredibly well-sampled kit with the most immense sample depth and variation that we were able to produce. We really wanted to explore what we can achieve with just one kit with our sample depth and reactive algorithms. Each drum was sampled from silence as well as from a previous resonance. Eyal brilliantly programmed a mechanism that keeps track of all that and triggers the correct samples according to the context."

cm: You've done a heck of a lot in a short time. How many different ideas for products do you have currently on the table, and do you work to a fixed release schedule?
Or: "We've released six products. Beat Scholar, Beat Scholar for iPad, EON-Arp, MINDst Drums, BitFuzzer and Time Oddity Chorus."
Eyal: "We have a lot of ideas, they're not in shortage at all. The main point of what we do is guaranteeing that something has value in terms of the final product, not just the


You can hear Or and Eyal's 'chops' in play in earlier work for Waves like Bass Fingers

Time Oddity Chorus: "It sort of built itself because we were excited about it"

idea. We'll have a few big picture ideas (like MINDst Drums) that we've been talking about for a while. We have those in our conversations so we know at some point we're going to make them. Then there are things that kind of develop organically. We'll play for a while with certain bits of other plugins then at some point we have to make a practical decision. We might say 'let's take a few days to make this prototype happen' or decide on a timeframe to make sampled instruments.

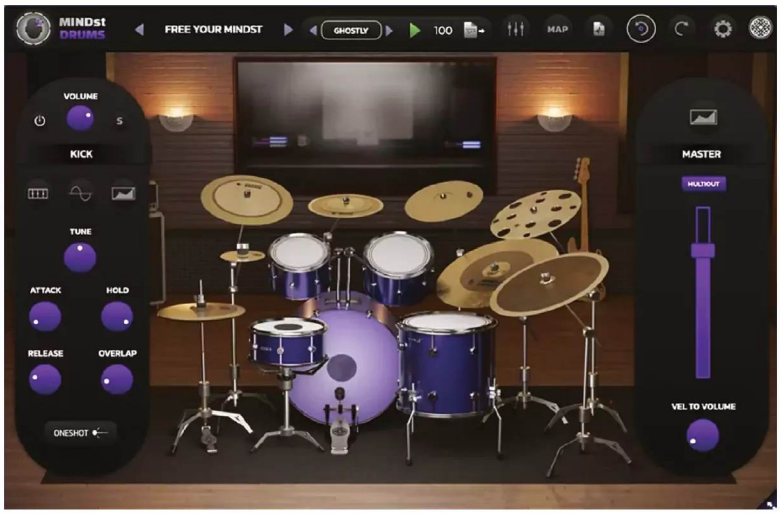
"So, we try to balance the practical with the creative. We don't want to have development cycles that take many, many years. If we make a sequencer engine, then the nuts and bolts we'll use again. The sequencer engine in Beat Scholar is the same engine that's in EON-Arp. It becomes much easier to build other things this way. We were brainstorming on other sequencer stuff as we were building Beat Scholar. We mix the practical and creative side so we always have stuff to do and material to work with."

cm: How many people work at Modalics currently, beyond yourselves?
Eyal: "Modalics is just the two of us, but we have freelancers who we hire for specific things. Nobody is working full-time. But there are people working on different segments. We have someone focused on customer support as well as marketing and video stuff and UI help. We have Mike Malyan making amazing videos for us, then we have people doing sample editing. So these amazing people are doing stuff for us but they're not employees, they have other projects that they're working on too. Some of them we'd love to get full-time, but they're too busy!"

cm: How much feedback do you get from the industry itself?
Or: "Everything we do goes through the filter of decades of experience between Eyal and I in different fields. From being instrumentalists to being producers. That's an initial filter, but then the fact that all of our friends are musicians and producers means we're kind of immersed in the industry from both sides. We've done enough development to have connections with other companies and market research. We also are fairly connected to the zeitgeist in terms of what's going on right now, and who is releasing what.

"A lot of start-ups (us included) don't have the resources to spend months doing market research before deciding what to do. We have to be kind of adaptable and work very quickly. So, we combine our personal experience and don't go way outside our own sphere. If it sounds to us like a good idea and we check it with some artists, then we get to a point of certainty which allows us to continue development freely. You have to rely on your intuition and people who you trust."

cm: How do you envision the future of Modalics? Will you always stay in the software world or could you imagine venturing potentially into hardware?



Modalics first exploded onto the plugin scene with their beat-slicer Beat Scholar in 2022

Eyal: "Hardware is something that is a personal interest of ours. Or has done quite a bit of work in that field. It's an interesting question because I think it is something that we'd like to do but the business aspects of selling hardware are quite complicated. There's a whole consideration to do with the supply chain and sourcing parts. We'd need to figure all that out. If we end up growing beyond what we are now then that's potentially something we could do.

"Why we like software is that we can iterate really quickly. We can make something and send it to our beta testers to get feedback. It's really hard to do that as a rule with hardware. You have to make sure your first version is the one that will get used and is ready to be performed with. It has to have the feature list that you want."
Or: "Also, we have a huge vision for our software. Ever since we started the company our dream has been to change how people create music digitally. Beat Scholar and EON were such signifiers of that ideal. We'd eventually like you to create music in our way. That would mean like a DAW or a songwriting suite that allows you to flow freely between our products, and maybe view rhythm in the Beat Scholar way. We want to create this sort of environment where, if you've been a fan of ours and you've been following us, it all makes perfect sense. Things should be inter-connected and three products on, we might have everything we need to do this. Not too far in the future, we'll start showing some integration between our products."

cm: On the heels of these sublime initial releases, then, what can we expect from Modalics over the next 12 months?
Or: "We definitely want to do more with MINDst Drums, I think we've just scratched the surface there. We're heavily in these discussions right now; it's a pivotal moment for us in a sense. We've been on a processing plugins road for quite a while. We're now looking towards what more we can say regarding chords and melodies and compositional-angled products."

For more info on Modalics, and to purchase their plugins, head to modalics.com

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>Free software PC MAC

INPHONIK RYM2612

There's flavour in abundance with this month's free software, taking its cues from the iconic sounds of classic video game consoles

> It's always exciting when we get to give away a synth, and this month's offering is an absolute corker. Inphonik RYM2612 (VST, VST3, AU, AAX, Apple Silicon and Reason Rack) makes an excellent addition to your sonic toolkit and this £44 synth is yours absolutely free with this issue!

Boutique developer Inphonik (inphonik.com) has a love for the obscure and RYM2612 is a perfect example. Based on the sound chip found inside a number of classic games consoles, and most notably the original Sega Mega Drive, RYM2612 is an FM synth with heaps of character.

The OPN2 chip (YM2612) was designed by Yamaha to bring its own FM-operator-based synthesis system to a broader market, and to that end it's essentially a self-contained 6-voice synthesis system with four operators per voice, stereo output DAC and sine wave LFO. Still, despite its popularity, it actually has a design flaw that results in low-level signals having exaggerated quantisation noise. This, of course, adds to the personality of the synth, and has been faithfully recreated in Inphonik's emulation. Meanwhile, more undesirable limitations like the 6-voice polyphony have had a well deserved upgrade. Inphonik have kindy supplied some additional presets and channel strips. There's 20 extra presets in both plugin and RePatch format, and also nine ready-made Logic Pro instrument channel strips. So follow along with us as we explore RYM2612!

LFO
Activate, set rate and apply LFO amount to pitch and amplitude

LEGATO RETRIG
Set the global playback mode

PRESET BAR
Load and save presets and set plugin settings

FREQUENCY CONTROL MODE
Choose from three different frequency modes: integer, floating and retrigger

MODWHEEL
Adjust modweel control of operator level and LFO pitch

OPERATORS
Adjust operator envelope settings and frequency

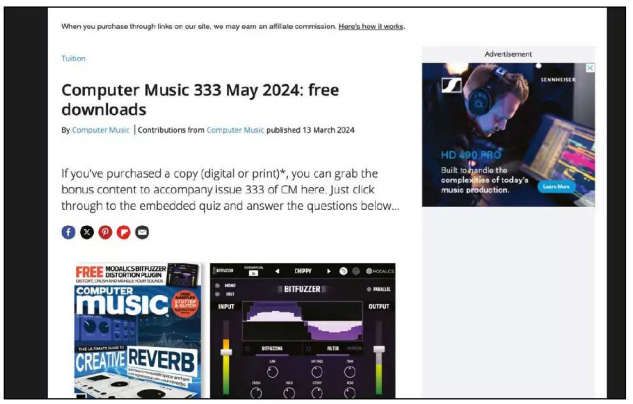
LADDER EFFECT & OUTPUT FILTERING
Activate these two hardware-inspired emulations

TOTAL LEVEL
Adjust the level of each operator

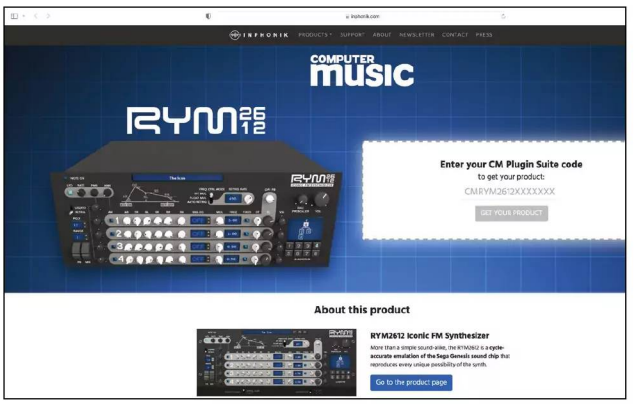
ALGORITHM
Choose from eight different operator configurations

Download the accompanying video and the MIDI/audio files at **bit.ly/cm334downloads**

> Step by step 1. Installation



1 > To grab your copy of RYM2612 head to this month's Computer Music download page (bit.ly/cm334downloads). With your issue to hand, answer the quiz questions to gain access and then follow the instructions to have your unqiue RYM2612 code sent via email.



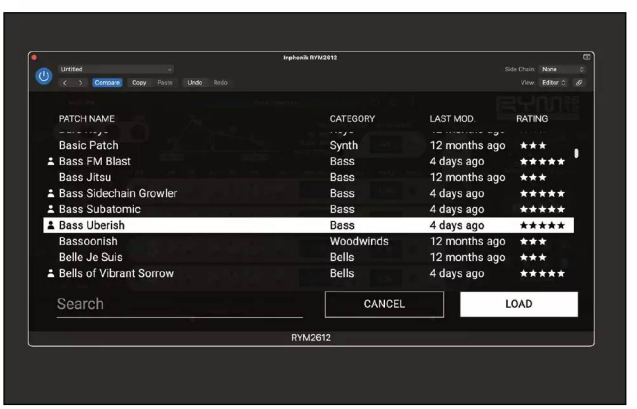
2 > Now head to inphonik.com/cm/. Enter your code where indicated and then provide your email. This gives you instant access to your own installers and will also email you links. You get three downloads, so make sure to back up your installers. Once installed, you're all set!

> Step by step 2. Familiarisation

1 > The RYM2612 layout is straightforward. Let's look at what's included. At the top, the main bar includes the preset browser and access to plugin settings including window scale. Just below is the global frequency mode for the operators and on the left is the LFO.

2 > Operators are the sine wave oscillator building blocks in an FM synth. Each has its own amplitude envelope and the various components are explained above. To the right of each operator are its frequency controls and main operator output level.

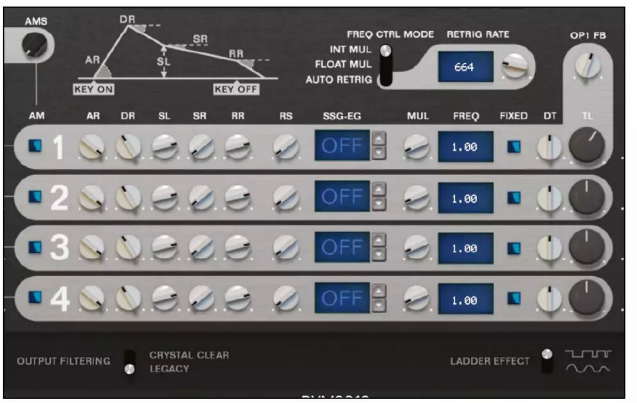
3 > Operators work together and how they do this is controlled by the Algorithm. There are eight configuration options and signal flow has a big impact on the sound. In any configuration one or more operators provide audio output. They're shown as solid white.



4 > Our giveaway includes additional presets plus install instructions. You essentially copy the files to the relevant folders for your platform. Included are 20 presets in both plugin and RePatch format, and also nine ready-made Logic Pro instrument channel strips.

> Step by step 3. Sound creation basics

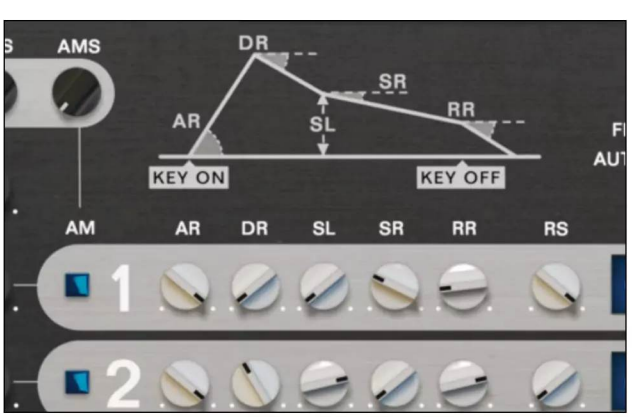
1 > If you've used a Yamaha DX synth, then the terminology and sound construction in RYM2612 will feel pretty familiar. Let's take things back to basics and construct some sounds from the ground up. To get started, load a fresh instance of RYM2612. This will load the Init preset.



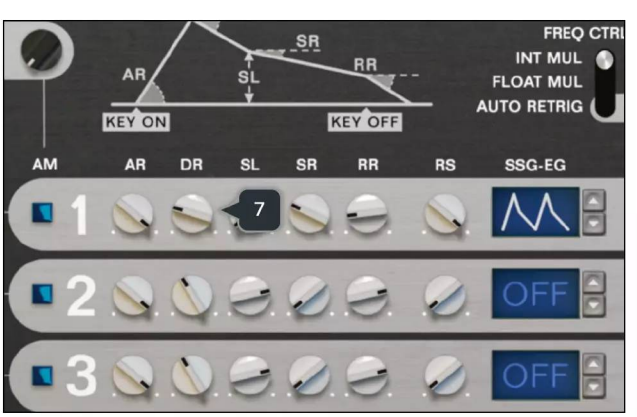
2 > RYM2612 uses four sine wave generators (called operators) and the way they're combined is specified by the signal flow (Algorithm) over on the right. You have a choice of eight Algorithms and within the graphic, any operator that's shaded white is an output operator. Its total level (TL) controls the audible output level.

3 > Select Algorithm 8 and this is very easy to understand. Each operator is an output and if you adjust the TL control for each, then you're essentially balancing the four operator levels. However, operators can also influence each other in the signal flow before reaching a final output operator. Try adjusting the operators in Algorithm 1 for example.

4 > Each operator has envelope and pitch parameters. Pitch is adjusted using a multiplier and, by default, this sets integer amounts for octaves and other relevant harmonic intervals. There's also a detune option (DT). Select Algorithm 8 and try some settings to see how the frequency parameters affect the pitch. You'll see the detune is very subtle.



5 > Each operator has its own envelope, and their function really depends on what role the operator plays in the selected Algorithm. Importantly, fully clockwise knob positions are the fastest settings. We've set AR at its maximum (31), DR(0), SL(0), SR(8), RR(2) and RS(3) for fast attack and slower release.

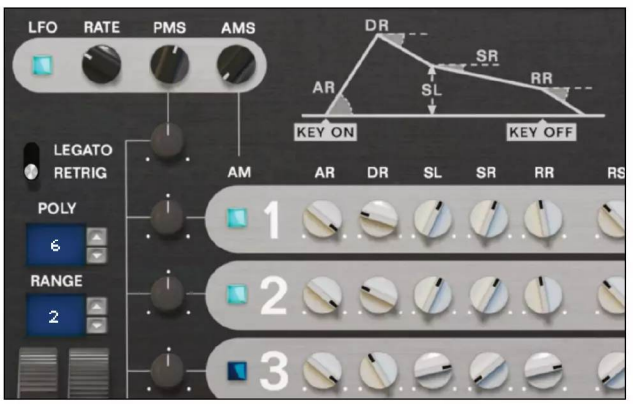


6 > The envelope sections also include SSG-EG (software-controlled sound generator) options that can modify the envelopes. Use the arrows to page through the eight settings. Here we've selected the first option (Repeat Normal). By adjusting our decay to DR(7), we can hear the envelope repeating when a note is held.

> Step by step 4. Further sound features

1 > RYM2612 has a number of further sound generation parameters. Firstly, Operator 1 has a dedicated feedback amount so you can feed its output back into itself. Try this and you'll see it's easy to create more edgy sounds and at higher settings, pretty noisy sounds too.

2 > As discussed, operator pitch is influenced by integer multiples. However, you can also use the YM2612 'special' mode, which you'll find just below the preset bar. Set this to Float Multiplier and you can select any value from 0.5 to 15.0. Try using this for dissonant effects or fatter sounds with modest pitch offsets.



3 > For modulation there's one very basic LFO with eight preset rate settings (0 to 7). The LFO can modulate both pitch and amplitude (PMS and AMS) and also integrates with the modwheel. The modwheel can also be used to control operator level. Here we've used the AM activate button for operator 1 and set overall PMS and AMS amounts.

4 > In this mode, you can also make use of the fixed pitch option. Each operator has its own Fixed button and, once engaged, the Multiplier button becomes a frequency selector (20Hz to 15kHz). This is great for percussive effects and here we've used it to create a ringy ride sound.

5 > CSM mode is an undocumented option found in the YM2612 that allows very fast note retriggering to create continuous tones. Select the Auto Retrig option and then adjust the Retrig Rate control next to it. You'll see that, in this mode, the frequency multiplier uses the floating option so you can more freely adjust the frequency.

6 > Finally, RYM2612 has two hardware feature options at the bottom. Output Filtering (Legacy/Crystal Clear) provides the option to emulate (or not emulate) the sound of the Sega hardware output. Meanwhile, Ladder Effect replicates the original D/A low amplitude distortion. For retro sounds, both settings impart quite obvious effects.

> Step by step 5. Using the DAC Prescaler

1 > RYM2612 includes an audio input mode, which is designed to replicate the sound of the 8-bit PCM sample output option of the original chip. The idea is that you can apply this sound to any audio routed through the instrument, and the DAC Prescaler control on RYM2612 allows you to fine tune the effect.

2 > You'll need to check how your particular DAW handles sidechain inputs for instruments, as this implementation in particular is handled in various different ways. Here in Logic Pro, we can route any available tracks using the plugin window sidechain option, which is reasonably straightforward as long as we mute the source track.

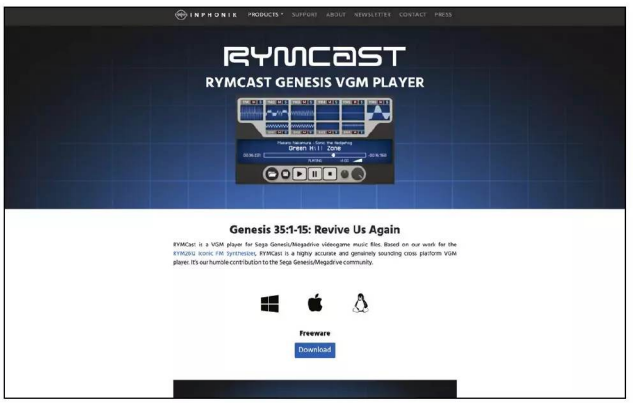
3 > However, if your DAW doesn't make routing audio via an instrument plugin very easy, there is an alternative as Inphonik has actually bundled DAC Prescaler functionality into a free plugin which you can download here: bit.ly/cm_inph_retdec. We'll use this to demonstrate what the effect does.

4 > Here we've loaded an audio loop and inserted an instance of PCM2612. The first thing you'll notice is that, in the default state, the plugin adds noise. However, the fun really starts when you wind up the DAC Prescaler. You have 32 steps of 8-bit decimation, each creating their own slightly different ringy effect.

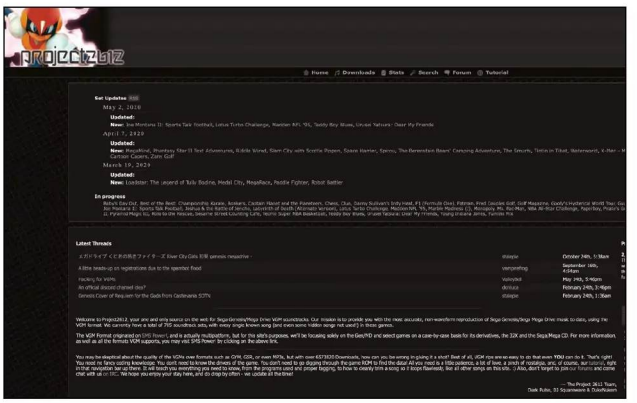
5 > Much like RYM2612, you can choose between Legacy and Crystal Clear modes and these also influence the sound, even in the default state with the DAC Prescaler set to 1. You'll see the plugin has other options including Mono and Dry/Wet mix. Meanwhile selecting the cog icon reveals the interface style and scaling options.

6 > As with any bitcrush or downsampling effect, outcomes can be varied and also level-dependent. This plugin also features the low level behaviour of RYM2612. Try reducing the level of your source signal and you'll find the sound becomes more dominated by noise and distortion.

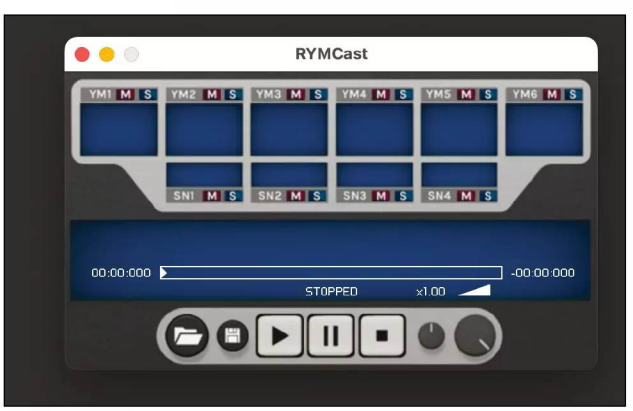
> Step by step 6. RYMCast Genesis VGM Player



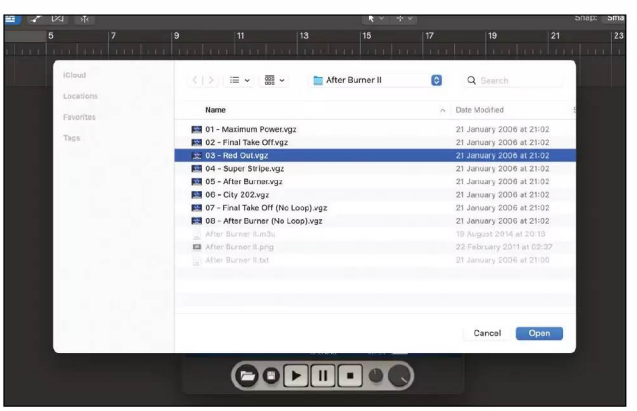
1 > Inphonik has created some further games console integration. RYMCast is a handy desktop application (Windows, Linux and OS X) that plays YM2612 compatible video game music files and lets you import the sounds into RYM2612. We'll be using it in this walkthrough and it's free to download here: bit.ly/cm_inph_rymc.



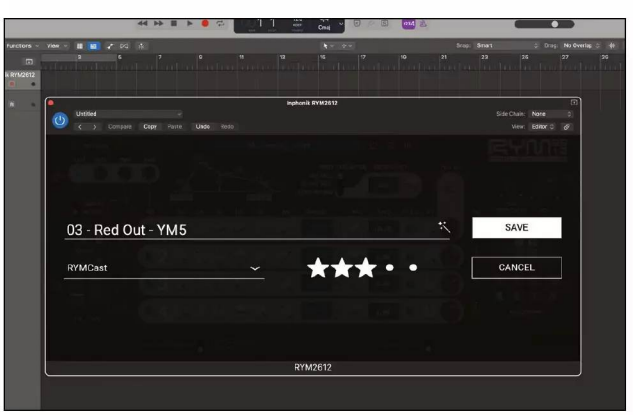
2 > To get started using RYMCast, you'll need some .vgm or .vgz files. Thankfully these are easily available from a number of internet sites, and if a general search isn't fruitful, you might want to start here https://project2612.org. Then head to the downloads page where you'll find all manner of user-uploaded content.



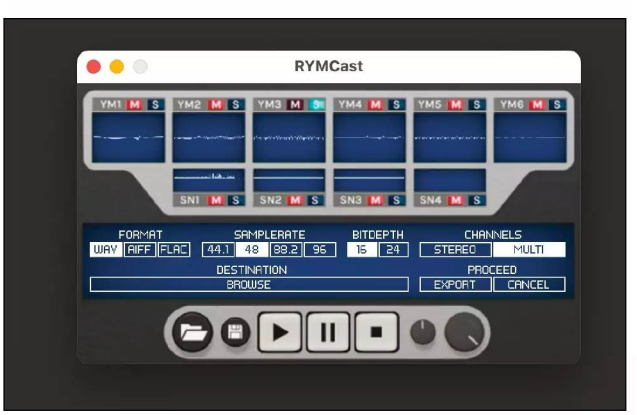
3 > Now open RYMCast. You'll see it's a compact application with a player interface. At the bottom you have playback controls including a position slider and a speed setting (x0.50 to x2.00). At the top are 10 cells, which will be populated once you open a suitable file.



4 > Select the folder icon to open your .vgm or .vgz file. If you now hit play, RYMCast plays back the loaded game track and you'll see it's been split into its components. Use the mute and solo buttons to audition different aspects of the track.



5 > From here, you can use the file icon to export the game audio in either stereo or multitrack formats, which is handy. However, what's interesting to us is that each sound can be exported as a RYM2612 preset. To do this, all you have to do is drag the required sound from its cell over to the RYM2612 plugin window.



6 > Here we've solo'd the parts to find a sound we like, and grabbed the fifth sound which is labelled YM5. Dragging this into RYM2612, you'll see the preset bar shows RYMCast and then replaces the current preset. All that you need to do now is save the sound as a RYM2612 user preset. **cm**

VOCAL EFFECTS

Never mind AI, this month we're getting the robots involved in production, as we demystify vocoders, talkboxes, hard-tuning and harmonisers!

Words: Roland Schmidt

> Can you remember the first time you heard a voice on a track which employed a sound that felt like it was a mixture of real vocals and a synthesiser? The chances are, you were listening to an instrument known as a vocoder, which combines synthesis and vocals to create that classic robot voice. This is the beginning of a production story that has influenced the style of many artists, both vintage and contemporary. It's now something we can achive with modern software, taking the old concept into our 21st century productions...

Unbelievable as it might seem, the concept behind the vocoder was developed back in the 1930s. The technology was adopted as a method of broadcasting audio messages in a state of encryption, which was put to use during World War II. It didn't take very long for musicians to realise the potential of vocoding technology. Apart from a number of novelty songs and tracks, such as the legendary *Sparky's Magic Piano*, vocoders became synonymous with electronic music, through artists such as Kraftwerk and Wendy Carlos. Even jazz-funk pioneers got in on the vocoder action, as demonstrated by the likes of Earth, Wind & Fire and Herbie Hancock.

But why should keyboard players have all the fun? Guitarists wanted to get in on the action, too, and a device known as the talkbox provided a similar sound for our string-based cousins, although it didn't stop artists such as Roger Troutman (Zapp) and Daft Punk liberating the talkbox back into the keyboard domain.

While these devices were always predominantly hardware-based, the rise of software has allowed us to access these effects readily within our DAW. With the march of technological development, so comes new production effects, and now we find hard-tuning and harmonizers playing an equally important role in production sound, delivering a similar but highly-contemporary version of the vocoding concept. Just ask Bon Iver, now the biggest exponent of the highly processed Prismizer effect.

If the subtleties of these different elements has eluded you until now, don't panic! The robots aren't coming over the hill just yet, but we are here to assist you, not artificially, but intelligently!

Vocoders & talkboxes

The most classic robot vocal effects are typically either a vocoder or a talkbox. But what's the difference between the two?

Vocoders and talkboxes are easily confused, not least of all because they sound incredibly similar. Because of their sonic similarities, you can arguably substitute one for the other, which, as we will discover, may not be such a bad idea – if you want to hang on to your teeth!

Carrying vocoders

Contrary to many people's assumptions, the vocoder itself is not actually a synthesiser, although it is quite usual to find a synthesis element within a vocoder, especially in plugin form. The vocoder component joins together two elements, both of which are required to make the classic sound. Firstly, we need a carrier wave, which is most commonly some form of synthesiser or inbuilt synth circuit. In the software realm, this is usually included as part of the plugin, and can be controlled by either setting a specific note or single chord, or using a keyboard to play notes in order to follow the chord progression of a song.

The second component that is required is a modulating signal. For a classic robot voice, this would need to be some kind of vocal, although it is not uncommon to use other instruments, particularly ones that are percussive in nature. Artists as diverse as Stevie Wonder and Röyksopp have been known to send drums in the direction of a vocoder, while playing chords that follow the song.

Smart plugins

If we consider original vocoding hardware for a moment, some of the best vocoders produced, shipped in the form of a box with no synthesiser attached. The Sennheiser VSM-201, EMS 2000 and Roland SVC-350 are all fine examples, but all requiring an external synthesiser, as well as a microphone input.

Roland realised that it could place this technology in a keyboard, and include a carrier circuit, in the shape of string and choir sounds. Hence the SVC-350 was somewhat better known as the infamous Roland VP-330, which Roland still produces today, but now in the guise of their boutique-shaped VP-03.

If this classic Roland sound is the sort of vocoder that interests you, then help is at hand in the software domain, too. Softube hasbeautifully engineered a reincarnation of the VP-330, as a software plugin. Moreover, it has a built-in carrier wave generator, so you won't need to fiddle around with a separate synthesiser in order to get your vocoder to work.

Got a mic?

All software vocoders will allow recorded audio tracks to be routed toward the plugin. This means that if you have a lead vocal already, you could employ this as your modulating signal. Playing chords alongside this vocal will provide the effect of beautiful electrified backing vocals.

Roland's Vocoder VP-03 is a boutique-shaped remake of their classic VP-330

Softube's reinvention of the original Roland Vocoder in plugin form

Vocoders can, however, be a little fussy about the modulating input. As we have already mentioned, percussive sounds work very well, so it won't come as a surprise to learn that the more percussive and articulated a vocal sound, the better the vocoded effect will be. For this reason, die-hard vocodists tend to prefer a vocal input via a dynamic microphone. There are plenty to choose from, with classic choices being the Shure SM57/58, Shure SM7B or the Sennheiser MD-421, which is well known in the recording industry as a perfect mic for recording toms on a drum kit. Therefore, you might find it better to record a separate vocal track, specifically for the purpose of using with your vocoder plugin.

Squashed and compressed

Like the vast majority of recorded vocals, compression can play a major role, whether deployed at the input or the output stage. Vocoder circuits will behave better if they have a steady and reliable compressed signal for the purposes of modulation. Whether you are vocoding vocals, drums, or anything else, compress your signal, as your vocoder will thank you by providing better results.

Because of their sonic similarities, you can arguably substitute one for the other...

Talking of boxes...

Vocoders can often be confused with a different technology, called a talkbox. Unlike vocoders, the talkbox can only exist in the hardware domain, although there are plugins available that try to mimic the characteristic sound.

Talkboxes operate in a very simplistic way, but can be difficult to use. As they were originally designed as guitar pedals, you will find many talkbox examples available as guitar stompboxes. In essence, a signal from either a guitar or synthesiser is fed into the effects pedal, before it becomes amplified, to a relatively loud volume. The signal then heads to a speaker, which is enclosed, except for the attachment of a plastic tube, where the sound is literally funnelled. The user then puts the tube in their mouth, before mouthing lyrics or vowels, back into a microphone for the purposes of either live performance or recording.

Think of the opening riff to Bon Jovi's *Livin' on a Prayer* and you will recognise a fine guitar-based example. This is also incredibly popular in the synthesiser domain, on classics such as the opening of Bruno Mars's *24K* and many Daft Punk tunes.

The only problem is, as the sound is so heavily amplified, all those high-volume frequencies swirling around your mouth can cause problems for your teeth! Don't believe us? Ask Peter Frampton, who became well known for using the talkbox with his guitar, and has been a denture wearer for many years!

The ever-secretive Roger Troutman: "You talkin' to me?"

Raymond Boyd/Michael Ochs Archives/Getty Images

Getting zapped!

One of the most prolific artists who made extensive use of the talkbox sound was singer and keyboard player Roger Troutman. During his tenure as the frontman for the American band Zapp, he became known as one of the world's finest exponents of the art of the talkbox. Though his innate musical talent brought much to his playing, the technology behind his talkbox was a closely guarded secret. It was reported by many artists who booked him to play on their tracks that he would keep his talkbox tech away from prying eyes, almost to protect the idea of it. Even so, what we do know is that he originally used a Minimoog with his talkbox, which was later replaced by one of the cheapest synthesisers from the mid-'80s Yamaha lineup. The DX-100, with its mini keys and reduced synthesis capabilities, became his weapon of choice, now copied by the current talkbox generation. Even the patch that Troutman used and designed to act as the carrier signal for his sound was a secret at the time, but it's now one that can now be discovered easily enough thanks to the internet...

Hard harmonies

That hard-tuned, robot-like sound, first popularised by Cher, has now become something of a staple in modern pop

It might feel like a relatively new concept within the production psyche, but the process that we describe as 'hard-tuning' has been around for nearly 30 years.

Back in 1997, audio software company Antares released a new piece of software which it called Auto-Tune. Its sole purpose was to analyse an incoming audio signal, before correcting any imperfections in its pitch in real time. Prior to this, it was not uncommon for studios to play vocal parts into samplers, and correct serious tuning anomalies using the production equivalent of keyhole surgery. It was a labour-intensive process, and one that Auto-Tune eradicated overnight. Moreover, the product name became an adjective, mistakenly applied whenever an artist used pitch correction software (much like the famous Hoover/vacuum cleaner paradigm).

Rock-solid tuning

It didn't take very long for early adopters of the Auto-Tune technology to realise that by increasing its auto-correction response time, you could engineer a sound which was quite otherworldly. Technically, the process is very different from vocoding, but the resulting output was certainly not a million miles away. It sounded different and contemporary, thanks to the lack of any remaining humanistic quality or inaccuracy.

Barry King/WireImage

Cher's vocal on *Believe* showed creative use of hard-tuning and inspired many to deploy it themselves

Less than a year from its release date, Auto-Tune made one of its most notable appearances on *Believe*, a huge hit by Cher. This extreme use of pitch correction was coupled with a vocoder, provided by the Digitech Talker pedal. While this release was not the first use of extreme pitch correction, it was certainly the moment where the concept, which became known as 'hard-tuning', picked up considerable traction. One genre that significantly adopted this process was R&B, and this concept has remained a part of its production style ever since.

Getting tuned

Antares clearly hit the market with a game-changing product. Auto-Tune became the must-have product, whether it was used as originally intended, as a quick and easy way to adjust tuning inaccuracy, or pushed it to its extremities for this new and highly addictive sound.

It didn't take very long for other products to pick up the baton with this style of processing, as many off-the-shelf DAWs implemented their own versions of the Auto-Tune concept. Many of these were very useful, particularly for those on a budget, but they all seemed to fall slightly short of the benchmark set by Antares.

Shuffle forward to the year 2000, and Celemony Software entered the marketplace with its contender to the pitch correction crown, Melodyne. It wasn't really the same form of product, but it was certainly impressive, with its ability to capture an audio signal and allow an extraordinary level of editing, which extended to the formant level, allowing the complete transformation of a vocal track. It did, however, lack the real time versatility of Auto-Tune, which remained an industry standard, largely endorsed by its speed and accuracy in use.

Light through a prism

While Antares was being applauded in the software domain, there were some very interesting developments occurring elsewhere,

The Antares ATR-1 is the original, rack-mounted Auto-Tune model

Antares Auto-Tune Pro is still very much an industry standard for easy pitch correction

Justin Vernon of Bon Iver is an expert in pitch manipulation

Andrew Lipovsky/NBCU Photo Bank/NBCUniversal via Getty Images

particularly in hardware. Digitech had been developing similar technologies for some years, but it was the concept of a hardware box, offering the ability to harmonise a voice in real time, that ignited a whole industry for auto-harmonisation, particularly in the live realm.

The concept relies on an inputted audio signal, which could be analysed to detect a note's pitch, before applying an instant harmony to the inputted note, by recycling and re-sampling the supplied audio. This effect, which is rather like shining light into a prism to reveal the rainbow colours which go to make up white light (hence Prismizer), became popular with a number of artists, including Imogen Heap and Jacob Collier.

With each use of this harmoniser technology, the public imagination was captured, much like the first outings of Auto-Tune and its predecessor, vocoder technology. It was the use of this harmoniser technique alongside hard-tuning that found itself with the label of 'Prismizer', in no small part thanks to its use by the artist Bon Iver on the 2016 album *22, A Million*.

The following year, a live performance of their track *715 – Creeks* resulted in speculation about the production process. The reality is that the name might be new, but the concept and technology behind it was not at all. We could really just regard this as a repackaging of a sound, under a new label, albeit an incredibly impressive one!

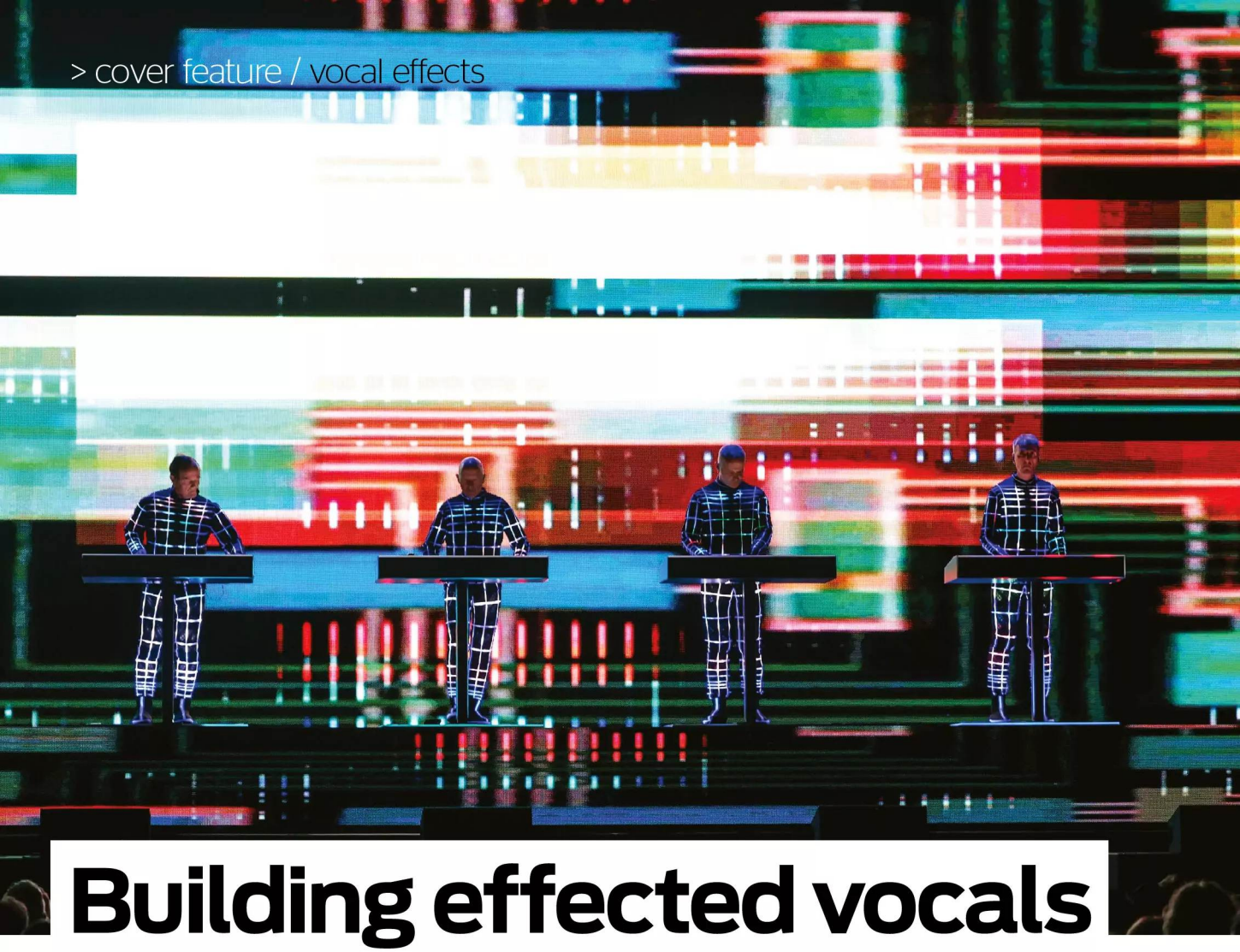
Apple's Pitch Correction plugin (left), included free with Logic Pro, and the Antares Harmony Engine, which applies quick and speedy harmonies to an inputted audio track

Going full prism

The good news is, if you want to recreate this effect, there are a couple of methods you can use within your DAW. We will explore recreating this classic effect in our feature tutorials, but we have to mention the ease with which this effect can be created through the use of a further Antares product: Harmony Engine is specifically designed to react to an incoming audio stream, and apply a choral-like harmony, with immediacy and total ease. Link this to a hard-tuned vocal as your input it signal, and the Prismizer effect will be immediate and immensely gratifying.

Prismizer live latency

It's simple enough to create the perfect hard-tuned and harmonised effects within our DAW, providing you have the right software. This is fine if we are working in the studio, but for any musician playing live (particularly singers), a less computer-orientated solution might feel better. Thankfully, there are many pedals that will instantly harmonise your vocal, and they can simultaneously listen to a keyboard or guitar part and harmonise a vocal to suit chords being played at a given moment. All the usual guitar pedal companies provide their own solutions, but a couple of notable options are provided by TC Helicon: the Harmony Singer 2 and the Eventide H9 Max Harmonizer. You could elect to take your laptop to your gig, and with a reasonably up-to-date machine, you should be able to keep latency low and achieve excellent results, using software. Keep those beer glasses away from your prized laptop though, before the harmonies come to a shuddering halt.



Building effected vocals

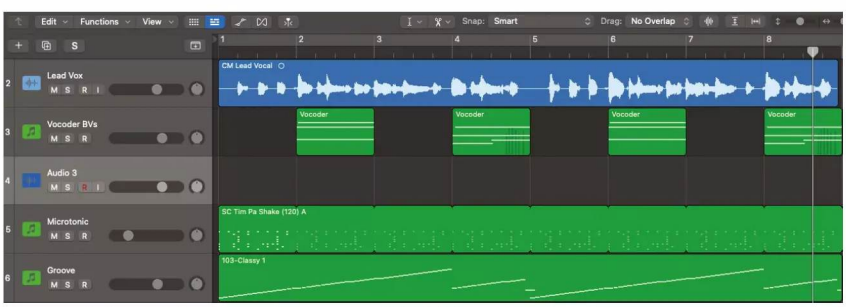
Knowing where to use vocal processing, could make or break your track. We take a look at where you might choose to add some electronic vocal colour

You may well be drawn to reading this feature based on the fact that you make a type of music that will benefit from one of these forms of vocal processing. The undeniable fact is that many of these processed elements have become intrinsically linked with certain styles of music. While also encouraging creativity, knowing where to use these effects is fairly vital – though rules are there to be broken!

We are the robots

We all love vocoders! What's not to like about changing the nature of your voice so that it sounds like some form of futuristic robot? The problem here is that the sound has become heavily linked with exactly that; anyone familiar with *Battlestar Galactica* will know the sound of the Cylons, and that isn't doing vocoders any favours, musically speaking! German synth pioneers Kraftwerk have much to answer for, too; their track *The Robots* made extensive use of the vocoder for the song's lead vocal.

In defence of the vocoder, the technology was also embraced by funk pioneers, with Herbie Hancock using one to disguise his own singing voice. But thanks to the vocoder's closeness to the sound of a talkbox, they are back in fashion within certain segments of pop and R&B.



Use a vocoder to supply backing vocals as a means of highlighting your lead vocal

Go heavy on the vocal transients to get the best vocoder effect

Photo by Dave Simpson/WireImage

The big question is, do you use the vocoder to act as your lead line vocal, or do you employ it as a means of creating interesting countermelodies, or for supplying backing vocals? This latter idea is perfect for dipping your toe in the vocoder pool. It won't be overpowering, and you can use an existing lead line vocal to act as the modulating signal, from within your DAW. In our example (below left), you can see where we have laced our backing vocal, using a vocoder plugin every other bar.

Clear, concise and over-pronounced!

The benefits of using a lead vocal part, to act as the modulating element for your vocoder, does make life a little bit easier. It means that you do not have to create a second vocal pass, but it does mean that you are completely reliant on the quality of your lead vocal part. Why is this a problem? Many lead vocals may be incredibly lyrical, melodic and highly musical, particularly within certain styles such as R&B. This might sound fantastic in isolation, but for the purposes of vocoding, it might not be the best ploy.

> Anyone familiar with *Battlestar Galactica* will know the sound of the Cylons, and that isn't doing vocoders any favours

Vocoders generally react quite well to signals that have heavy transients, or to put it another way, tracks that are over-enunciated or over-pronounced. Employing a hard front to a particular word, followed by an over-articulated and possibly elongated vowel sound, will likely give you a better vocoding result. Much of this can be achieved at the source by recording an overexaggerated vocal pass (see below left); however, you can also use plugins such as compressors or transient processes to heighten the transients in your track.

It's easy enough to experiment with this concept, so just try recording a vocoder vocal. Remember, this vocal will be going through a vocoder, so it doesn't matter how it sounds in isolation as you won't hear it dry anyway.

Rousing harmony

The initial logic that we used for the employment of vocoded backing vocals also applies to harmonisers. The lush, thick texture that a harmoniser can create – especially if it is supplying a number of harmonies to a vocal track – means that you can definitely have too much of a good thing.

Once again, consider the placement of the effect you wish to create. There are some prime examples of tracks that make harmonising a feature, such as Imogen Heap's *Hide and Seek*, but you cannot ignore that this really is the central component of the entire song. It relies heavily on the effect and the technology, with little else to shore up the production, not withstanding Heap's amazing vocal performance, of course.

This harmoniser-centric construct will likely be too heavy if used continuously throughout a song, so much like our vocoded backing vocals, choose specific moments to point out certain phrases, or maybe use only as part of the chorus, for example.

Many harmonisers, such as the Antares Harmony Engine, will accept a MIDI signal, meaning that you can alter the harmony as your track progresses.

The harder they tune...

While vocoders could be considered stylised, the hard-tuning concept is the most stylised effect of all. It has become part of the R&B narrative to such an extent that over-employment of pitch correction will likely conjure this stylistic image, regardless of its setting.

If you want to use hard-tuning on your vocal track, it's simply a case of setting the Retune Speed to its maximum, while adjusting other parameters for scale or formant. It can also be used sparingly, though, as a helpful aid to improving the tuning of a vocal or instrumental track. The track you're applying pitch correction to does have to be monophonic in make-up, but used sparingly you should not know it is there.

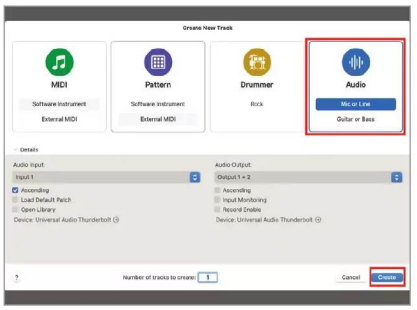
In settings such as this, it is vital to use your ears, and be objective. If you don't want the classic hard-tune effect, listen carefully and back off the response time to make things sound more natural.

You can control your harmoniser plugin over MIDI if you switch modes

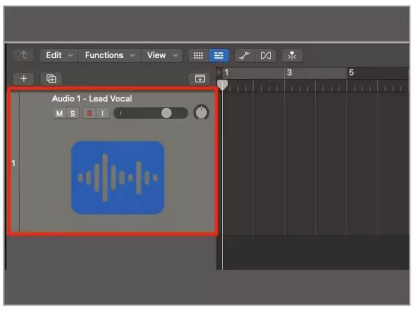
MIDI-controlled vocal plugins

Due to the way that vocoder and harmonising plugins work, in years gone by they have felt particularly difficult to employ within a track. The good news is that, as the technology has developed, so has the level of implementation, meaning that they are now easier to use than ever before. As both vocoder plugins and harmoniser plugins can be controlled via MIDI, it is important to note that you will often use them as MIDI-controlled effects, which are accessed in the same way as virtual instruments. This will allow the plugin to respond to a MIDI keyboard input, while the audio element can be sidechained to the plugin, in much the same way that you might sidechain a compressor. If in doubt, explore how you use MIDI-controlled effects within your DAW, as this will give you the clues you need to access these plugins.

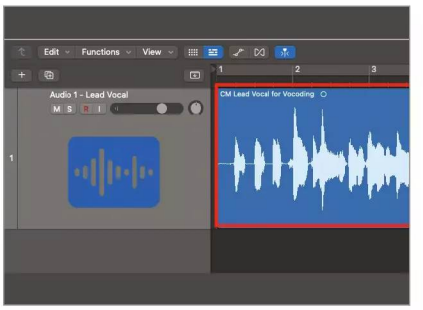
> Step by step 1. Setting up and using your DAW's vocoder



1 > We are going to assume that we are starting a track from scratch, although you can also apply this process to a track which is currently in progress. Most commercially available DAWs include some form of vocoder plugin, so why not use what you already have?



2 > Create an audio track, with suitable settings ready to accept a recorded vocal. You can also use sampled vocals if that suits your production style. If you do intend to record, be sure to use headphones to limit additional spill from your monitoring to the microphone. This can easily interfere with the vocoding process.



3 > Make your vocal recording either by singing yourself or by recording another singer. Be sure to try and capture a vocal track which provides heavy transients, with each consonant employing heavy pronunciation. If you want a different effect, you can also try a drum loop to achieve a percussive vocoded output.

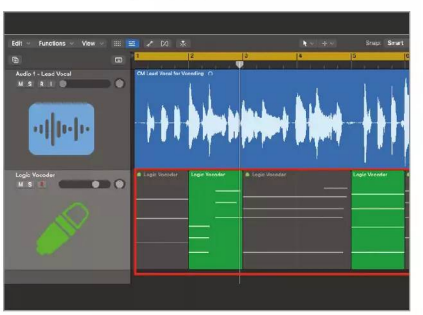
4 > Apply some appropriate EQ and compression to the vocal track. It is sometimes a good idea to subtract some of the lower frequency content, as this can interfere with the sound you are trying to extract for vocoding purposes. By compressing the track, you will also create a reliable signal for the vocoder to work with.

5 > Create a virtual instrument track within your DAW, and load an instance of your included vocoder. Remember, this may sometimes be listed under the category of MIDI Controlled Effects. You can also use a third-party vocoder, should you have one available. We are using the EVOC-20 Vocoder plugin, which is included as part of the Logic Pro X suite.

6 > Just about all plugin vocoders will supply the synthesiser carrier wave, from within the plugin itself. You will also have to assign a modulation input, which is normally done through sidechaining. Locate the appropriate drop-down menu, and select your vocal track to act as the modulation signal. If you want to experiment live, select a microphone input, then you can speak, sing, and play at the same time, to experiment with your vocoder.

7 > Try running your track, and playing your MIDI keyboard, to indicate which notes you wish the vocoder to play. It's important to note that it is very rare for vocoders to be as you would like them without making some adjustment. Tweak to the modulation signal input level, sensitivity and sidechain envelope settings. This will heighten the effectiveness of the vocoder operation.

8 > Now commit your chords to MIDI by recording them onto the vocoder track. For the moment, play chords that fit with the vocal part for the whole phrase that you have recorded. You may also wish to quantise your MIDI once you have completed your recording.



9 > As the vocoder part is in MIDI form, you can chop your track up and mute sections that you do not want to hear. This will have the effect of heightening elements of your vocal part that you wish to have supported by the vocoder. Blending the two signals together will create a highly effective piece of production.

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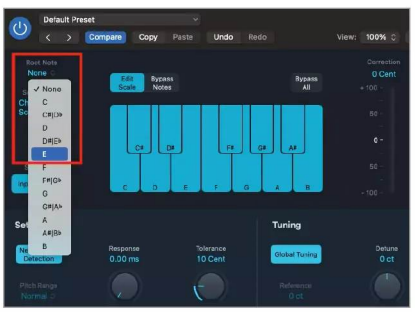
> Step by step 2. Using the hard-tuning effect on vocals

1 > Begin by loading a song which you feel would benefit from having a vocal part that adopts the hard-tune treatment. Bear in mind, this does not have to be a lead vocal, and could be a counter melody or backing vocal. Sometimes, using hard-tune sparingly can be more effective.

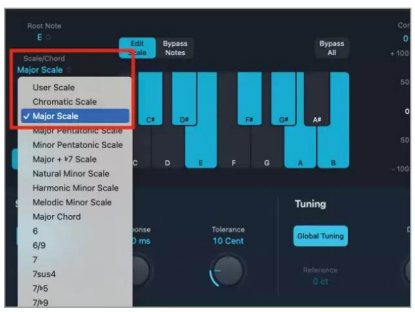
2 > Prepare the track that you want to affect by applying EQ and compression. Much like our vocoder preparation, you might find that too much bottom-end frequency isn't very beneficial to the overall mix. Adding compression will provide the correction plugin with a better signal to lock to.

3 > Now add your pitch correction or Auto-Tune plugin; most DAWs provide some form of pitch correction plugin, and the settings will be fairly consistent across all plugin types. If you have the Antares Auto-Tune plugin, you will probably find this to be a cut above anything included for free within your DAW. Our example demonstrates the pitch correction plugin included with Logic Pro X.

4 > Begin by auditioning your vocal track, by pressing play on your DAW. We want to set the plugin so that it applies correction immediately. We can activate this by locating the response time, and reducing it to a value of Oms. You should immediately hear the pitch 'twitching' as it tries to settle on a note.



5 > In order to achieve an optimum effect, we need to alter elements relating to the scale of the song. Our example is in E major, so we want to begin by selecting the root note of the scale, which in this case will be E.



6 > By default, many pitch correction, plugins will preset to a scale type known as 'chromatic'. This is a rising scale, made up of semitones. To amplify the overall effect, we will set our scale to major. If your song is in a minor key, select minor. There are often plenty of other scale options, which include chord and mode types.

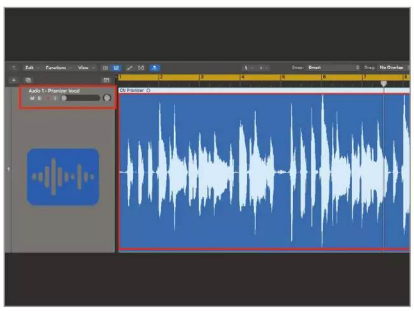
7 > Our example of vocal contains only three notes, which are E, F# and G# . We can highlight the effect of the hard-tune, by deselecting the notes in the scale that are not required. Deactivate the notes that we do not need, for an even better and far more accurate overall effect.

8 > Some plugins may offer a form of humanise or tolerance control. This is not something we really want in this hard-tune setting, so reduce any such controls to a value of zero. Of course, if you do like the sound created by humanising your track, you could leave, or even increase this setting.

9 > Finally, don't forget that this is still a vocal track, and applying some of the usual vocal effects, will be hugely beneficial. Try applying delay or reverb after your pitch correction plugin.

> Step by step 3. Creating the Prismizer vocal effect in your DAW

1 > In order to replicate the classic Prismizer effect, you will need to have harmonising software, and the best option is undoubtedly from Antares, in the shape of Harmony Engine. Depending on the sound you want to create, you may also need pitch correction software, which may form part of your DAW, or for the ultimate solution, we recommend you get a copy of Antares Auto-Tune.



2 > One of the first decisions to make is whether you wish to use a recorded vocal, or use this process live. Both scenarios are possible, but be aware that using software of this kind in the live environment will result in a small degree of latency, as the processing takes place in real time. For our example, we will use a recorded vocal line.

3 > To create the Prismizer effect, you will need a vocal part with hard-tuning applied. In order to set this up, take a look at the previous tutorial. In essence, you are applying pitch correction, set to its fastest retune speed. The terminology may differ, if you are using a different pitch correction plugin.

4 > You may decide that you want your initial vocal to sound slightly less processed and more soulful. If this is the case, alter your settings using your pitch correction plugin to be a little more forgiving to the incoming vocal line. Back off the retune speed/response time. This would be appropriate for an effect more akin to Imogen Heap's *Hide and Seek*.

5 > Create a software instrument track in your DAW, and load in the Antares Harmony Engine plugin. It is really vital to ensure that this is loaded as a MIDI Controlled Effect, which is normally accessed in the same way as loading a software or plugin instrument, rather than a conventional audio effect plugin.

6 > From the Side Chain menu, in the upper right-hand corner of the plugin window, select your chosen audio/vocal track that you intend to harmonise. If you intend to play live, you will need to select the appropriate microphone input channel instead.

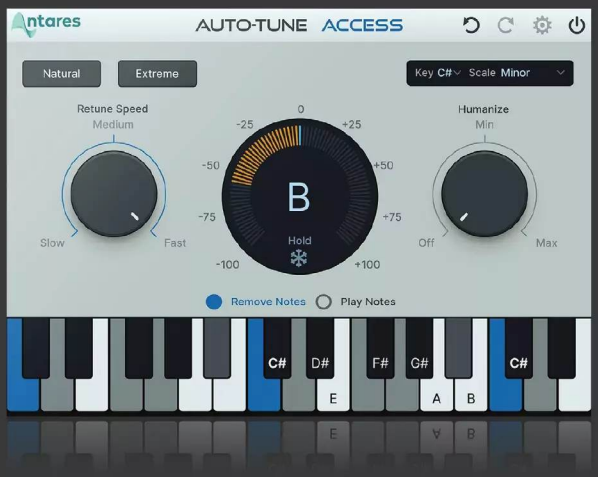
7 > If you want your harmony to be fixed to a single chord but move and react to your lead vocal, alter the harmony control settings to reflect the key of your song. Here we want harmonies fixed to E major, but with chords that change as our vocal alters pitch. Experiment with the Harmony Source settings, as these will yield different degrees of harmonic movement, according to the vocal.

8 > In its current state, Harmony Engine will provide some very gratifying harmonies, fixed around our specific key of E major. The next step, for either using live or for developing the harmonic additions in a track, is to use MIDI to dictate the chords you wish the plugin to adopt. Using the Harmony Source menu again, select Chord via MIDI from the dropdown menu.

9 > When you now play your MIDI keyboard, you will hear the plugin respond to the chords that you play. You must ensure that you have the software instrument track selected, and your vocal part will need to be playing to provide an incoming signal. If you are playing live, you'll need to sing into your mic to provide an incoming signal. This will take practice, but the end result is worthwhile!

Vocal effect buyer's guide

Whether you are looking to apply some vintage vocoder to your track or to Prismize-up your vocal, here is the best crop of plugins to consider, for everything from a vintage to a super-modern sound



Antares
Auto-Tune Access 10
Mac/PC £49

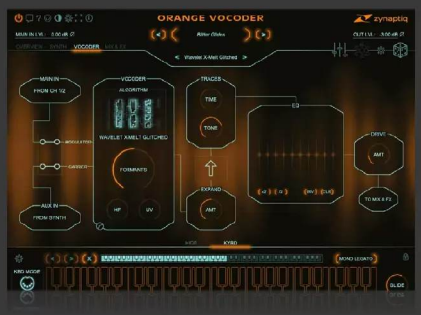
The Auto-Tune lineup has expanded to considerable proportions, with numerous versions of the plugin to satisfy every price point and user type. This is the most basic iteration of Auto-Tune, but there is nothing basic about its capability. This timeless plugin is reliable and dependable, and does exactly what it says on the tin!

antarestech.com

Softube
Vocoder
Mac/PC €99

Designed to offer a vintage sound, Softube's vocoder plugin offers a passing nod to the Roland vocoders in both sound and aesthetic. It includes a basic but powerful on-board synthesiser, which will provide you with your carrier wave. It's great for classic vocoder duties, especially for pushing drums in the vocoder's direction.

softube.com



Zynaptiq
Orange Vocoder IV
Mac/PC €169

The Orange Vocoder is one of the longest-standing plugins in existence, but was in need of a radical reformation, and that's certainly what we have with version IV. As well as having everything built-in to get you started, it also has a myriad of vocoder styles and pretty good examples of talkbox.

zynaptiq.com

Antares
Harmony Engine
Mac/PC £286

As one of the most highly regarded harmoniser plugins on the market, the Harmony Engine's reassuringly expensive price underlies its capabilities. If you want to create the Prismizer effect easily and effectively, this is really the plugin you need to fulfil the harmony element.

antarestech.com

iZotope
Vocalsynth 2
Mac/PC £189

Vocalsynth 2 is a feature-packed plugin that can turn an imported vocal of the most average quality, into an impressive-sounding synthetic line. It can also provide classic vocoder, and talkbox effects with a minimum of fuss! It's impressive, and one of the best on the market.

izotope.com

Eventide
Quadravox
Mac/PC $99

This very capable harmoniser plugin from Eventide is a slightly different proposition to the Antares option. Adding four harmonised voices to an incoming signal, it can create interesting rhythmic and harmonic patterns. It is more simplistic than the Antares, but can yield some excellent results if working on a smaller budget.

eventideaudio.com

Waldorf
STVC Vocoder/ String Machine
£499 (hardware only!)

There is nothing quite like sitting down at a keyboard vocoder to get you inspired. The Waldorf is a great contemporary example of what a vocoder can do, with some excellent vintage and modern sounds, backed up by some beautiful string sounds.

waldorfmusic.com

Antares
Auto-Tune Vocodist
Mac/PC £88.50 (or on monthly subscription)

As if Antares didn't have much of this already sewn up, their very own vocoder plugin not only features Auto-Tune built-in, but it provides a complex dual oscillator synthesiser to handle your carrier wave. It also comes complete with an extensive set of artist presets.

antarestech.com

MXR
M222 Talkbox
£198 (hardware only!)

Finally, if you want to channel your inner Daft Punk, you might want to explore the hardware option of a talkbox. MXR make an easy to use guitar pedal, aptly named Talkbox, which can accept a guitar or keyboard input and will have you sounding like Roger Troutman in a matter of minutes!

jimdunlop.com

14 vocal effect tips

01 GET A MIC

If there is one thing that you will need to get the most out of your electric vocal propositions, it's a microphone. Strictly speaking, any microphone can do the job, but some microphones are better than others, and it doesn't always mean that you have to spend a fortune. Vocoders take very kindly to dynamic microphones, whereas condenser microphones will be a better choice for recording into your DAW. You don't have to spend a fortune to get impressive results.

02 OK COMPUTER

For something completely different, consider using the text-to-voice feature on your computer to record and act as the modulatory signal for your vocoder. Bands such as Radiohead have been known to make use of this speech technology, but don't use something that sounds too realistic. Everybody wants to hear a robot sing, and this could be the perfect way to achieve it.

Daft Punk: perhaps the quintessential vocoder-lovers?

Marc Grimwade/WireImage

03 MAKE TIME FOR VOCODER PRACTICE

If you like the idea of playing the vocoder, you may well have to get used to the concept of playing and singing at the same time. We say singing, because with vocoders, the pitch that you sing has no effect on the vocoder's output and sound. What does make a difference is if you're over-pronouncing the words that you are saying. Doing this at the same time as playing a keyboard may take some practice, especially if you want to do it live!

Practice makes perfect, especially when it comes to playing a vocoder

04 LISTEN TO THE MUSIC

As with any music and production, we can learn plenty from the past masters. Whether you are intending to Prismize your vocal, or play a talkbox live, take time to draw inspiration from artists and tracks that have impressed you in the past. Use analytical ears, to try and learn how to improve your craft.

05 PUSH THE BOUNDARIES

The software involved in creating some of the classic effects described in this feature are continually under development. Stay up to date with any software that you own, as there may well be features that could push you in a new direction, and find you creating the next big sound.

Shure SM35 mic headset: not just for Steps

06 THE HEADSET

If you find yourself vocoding on a regular basis, you may want to consider purchasing a headset microphone. While these forms of microphone picked up a bad rap thanks to questionable pop groups such as Steps, relying on them, it does make the process of vocoding far simpler, as you don't have to step towards the mic.

07 TWEAK YOUR FORMANTS

Once your vocal is inside your DAW, you can do an incredible amount of editing and vocal destruction or improvement. One fascinating concept is the alteration of the formants found within our vocals. You can create some very strange sounds by adjusting this control in software such as Auto-Tune.

Waves' Tune Real-Time pitch correction is as quick as they come

08 ONE BY ONE

If you are working to a tight budget, but already have some form of pitch correction software, you can get very similar harmonising effects by manually recording one track at a time. This will require some effort, but the results, particularly on a budget, can be quite spectacular!

09 LESS IS MORE

If you do decide to create a track with shades of Bon Iver, remember that part of the success of his winning sound is the fact that the vocals, with heavy auto-tuning and harmonising, are firmly the centre of attention. Let your sound breathe within your production, and everyone will be talking about it!

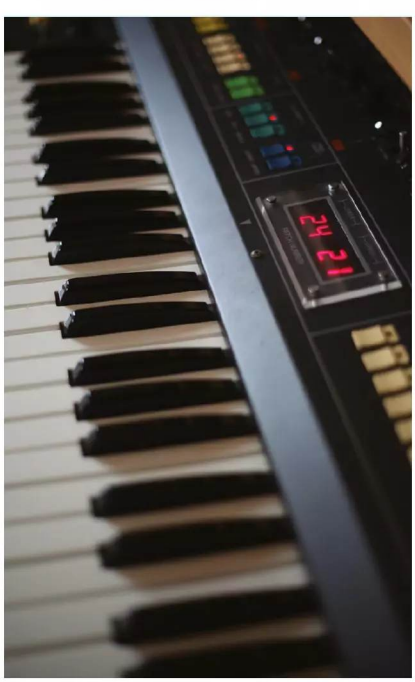
10 KEEP YOUR SIGNAL DRY

Another part of the success of the Prismizer concept is that the sound is relatively dry in the mix. Don't be tempted to make up for lack of quality in the initial recording by adding copious amounts of reverb. This will just make it sound like you recorded in a swimming pool.

Cherry Audio's Cherry Rhythm CR-78 is a great plugin for feeding a drum part into a vocoder

11 GET PERCUSSIVE

If you're into creating interesting vocoder sounds, try feeding a drum part or drum machine through the vocoder instead of a vocal. You can get some amazing sounds this way, which can sound very contemporary in the right setting.



Why not try a hardware synthesiser when experimenting with different forms of carrier waves?

12 CARRYING THE WAVE

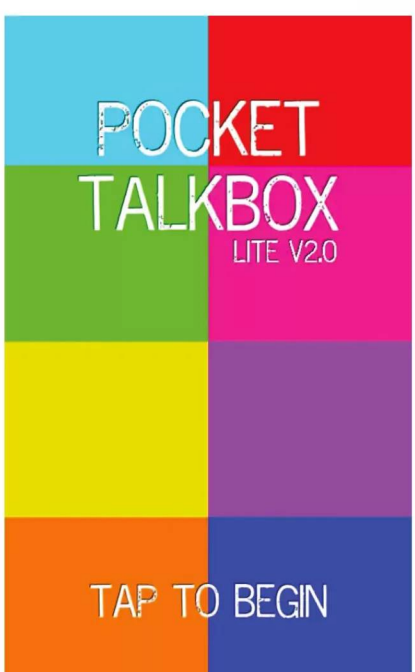
If you are working with software vocoders, experiment with different forms of carrier wave, possibly from an external synthesiser. You may find that some form of third-party carrier wave sounds better than the carrier provided by the plugin itself. If you are lucky enough to own a hardware synthesiser, try that.

13 USE YOUR PHONE!

We know it sounds weird, but did you know that you can get talkbox apps for your phone? Check out your phone's app store and you'll be surprised what you can do by pointing your phone's speaker to your mouth! It's a cheap alternative with limitations, but it could provide all of the character you need for your track.

14 MIND YOUR TEETH!

There's nothing quite like the sound of a vocoder, but the talkbox – being only available in a hardware form – can sound organic and authentic, especially for R&B. But be forewarned! All those loud musical frequencies rattling around your mouth can cause dental issues, so limit your exposure! Otherwise, you'll need a crown or two, and they'll obviously have to be '24K!' (...to quote Bruno Mars). **cm**



Pocket Talkbox Lite is just one example of a talkbox app you can install onto your phone

KÖLSCH

Danish house and techno artist Kölsch's latest album, *I Talk To Water*, incorporates recordings by his late musician father, and explores the emotional weight of grief; a sonically dense masterclass by a multi-million-streamed artist at the height of his creative powers. We found out more about its conception

> It's something that, at some point in our lives, we all must sadly face. The death of a loved one – particularly a parent – can be a life-defining, emotionally crippling moment. For Danish techno monolith Kölsch, the loss of his father, Patrick Reilly, some 20 years ago, still loomed large internally. On his latest record, *I Talk To Water*, Kölsch (aka, Rune Reilly Kølsch) took audio recordings of his father, a sometime musician and guitar player, and built new electronic arrangements around these starting points.

We caught up with Rune to learn more about this intriguing process, and just what motivated the making of his fifth, and most arresting, record to date.

"Well, from a broader point of view the album process started basically 20 years ago when my father passed away," explains Rune. "He was a musician and songwriter but he never released any music. He worked with drug addicts for 25 years and decided that that was his way of life, but nevertheless he'd play his guitar pretty much every day. I was into more modern music and he'd often come crashing into my room and start playing his guitar over anything that was on my stereo – it was pretty annoying at the time but in retrospect, quite funny."

Following Patrick's death, Rune avoided listening to anything his father had recorded. "It was quite sore and sensitive for me. During COVID, I finally mustered up the courage to go through his work, and some of it was recorded on MiniDisc and was usable, but some of it was broken. I found a few beautiful pieces, three of which ended up on the album."

Where it began

Wallowing in these old MiniDisc recordings became a comfort to Rune, and creatively inspired the thematic thrust of his fifth album. "Initially I was going to put together an EP that was just him," Rune says. "I thought it was a nice idea to release his first recorded work 20 years after his death! At the same time, it became a bit silly – realistically nobody would have cared. It would have been a good story, but only for me. I decided to make it a sort of collaborative effort. I thought I could take his music into a different dimension and meld it with what I'd been working on for the last few decades."

The making of *I Talk To Water* spanned the next few years. "It was a long process, I discarded at least 12 or 13 tracks in the process that were not good enough. I'd say it started to really get going around 2019 and then dipped during COVID. Then after that it took a while to get finished. All the tracks are pretty much about the whole situation. I think it's important to stress that the album is not an album *about* loss as such, but it's more an album about how to deal with grief over two decades. It's a retrospective on how I dealt with it. It's not necessarily a negative thing. There's a lot of power in grief, there's a lot of energy that you can use as a human being. This is my way of showing what it did for me, if you will."

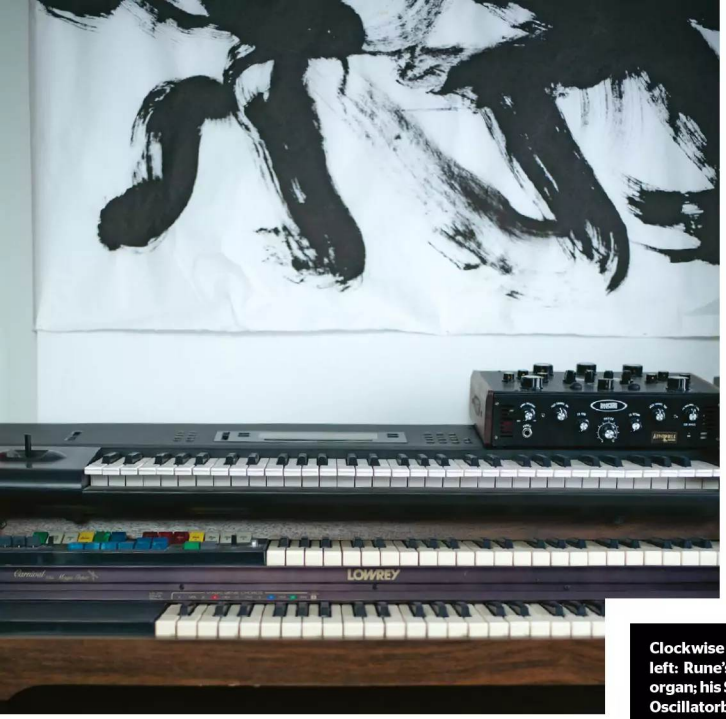
Amid interlocking synths, throbbing grooves and pulsing undercurrents, that trio of tracks – *Grape*, *Tell Me* and *It Ends Where It Began* – heavily foreground the found recordings of Patrick's voice and guitar playing, with the latter track (the album's closer) hardly featuring Rune at all. "There's a bit of modular synth going on in the background, but I liked the idea of letting him end the album. Funny story, *It Ends Where It Began* was first recorded in the living room of my first apartment, where I lived when I was like 18 or 19. I was working on an album back then, and he recorded that piece to be a part of that album. I guess that was around 1997 or something. That album never happened, but I love the fact that all these years later, I could use that recording."

> "It's not about loss as such, but about how to deal with grief over two decades"

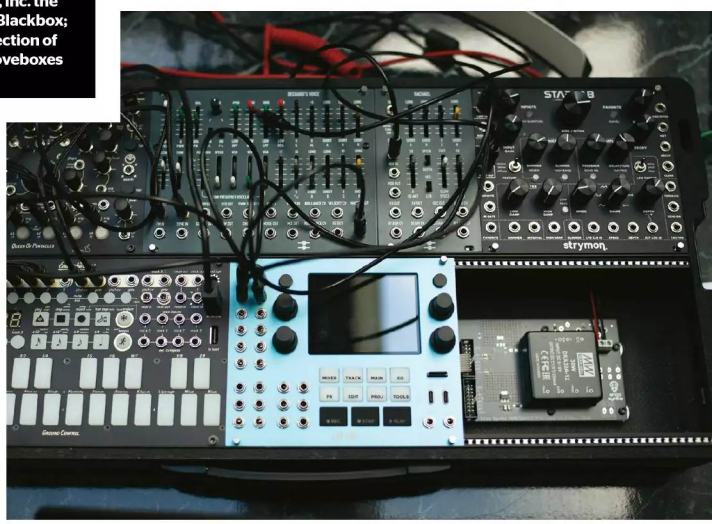
The track *Tell Me* was built from one of his father's more complete songs. Discovering the original recording during lockdown, Rune was bowled over by his late dad's songwriting talents. "That's something he wrote, which really impressed me. Obviously he was inspired by Bruce Springsteen and loads of these types of songwriters. I appreciate his talents a lot more listening back, that I never really acknowledged when I was a teenager."

Jane's addition

Notably, the title track of the album features guest vocals from one Perry Farrell – the iconic frontman of rock legends Jane's Addiction. The powerhouse vocalist is an arresting presence on the ethereal track. We ask Rune how this collaboration came to be? "Perry and I connected a while back, we were in Denver. I didn't know at the time, but Perry was getting quite into electronic music and still is, he's doing amazing stuff. But, I wasn't aware of it. I ended up chatting to his manager and his team and learned that he really was a fan of my work. We had a chat over Zoom and had a long conversation about the connection between



Clockwise from top left: Rune's Lowrey organ; his SimpleSizer Oscillatorbank; his modular rig, inc. the 1010 Music Blackbox; and his collection of Roland grooveboxes



water and loss. He had experienced something very similar as an old friend of his had passed. His friend was a surfer and was always in the water, Perry is a surfer too. My father was cremated and poured into the water. There was something very binding there, and we had a long conversation about these things. He's an incredible guy, very philosophical and very intelligent. A very thoughtful guy. So, we decided to make this track together which was a great experience."

Figuring out what tools to use to wrangle such an impactful vocal in the mix was tricky. "Because Perry has such a powerful voice, I had problems making it sit in the mix as a pure recording when it came over. It kind of overpowered the whole thing. I had to EQ it a lot, compress it a lot, make it sit a bit differently. I dirtied up the vocal a little bit to make it sound more akin to my kind of production. We had a bit of back and forth to get that right."

Aside from Farrell's dominant vocal, the title track's kick and bass impacts with a considerable thud. It's a similar story elsewhere on the record, with the low end of *Dreams* and *Pet Sound* similarly bone-shaking. We ask Kölsch to talk us through how he makes his low end sound both kinetic and forceful. "It's one of the things that I'm really focused on making different. A lot of people tune their low end to be in the same key as the bassline, that seems to make sense in terms of getting a mix that gels well together. I tend to tune my kick under the bassline. It's a technique I started and developed when I made my biggest record, *Grey*. The click from the kick would sit under the low-end tail of the bassline. The reason I decided to do this is because it kind of opens up the track even more. There's a classic technique used by disco producers, it's also very prominent in Chic records, where they would divide the chord notes over different instruments to make the record sound bigger. It was an important technique to use at the time, as they didn't have the technology that we do now. It's similar to my thinking with the low end. If you're listening to one of my tracks on a phone, you'll still hear the click of the kick drum and the bassline as separate components, on a bigger system you get that low-end rumble afterwards. I like it because it's a different approach. I guess everybody else would mix the bass under the kick. I like to do it the other way round.

"It's no secret at all," Rune clarifies. "It's essentially pitching down the kick drum to make it sit right but obviously still in key. Not in the same key as the note, but the same key as the record."

> "Because Perry has such a powerful voice, I had problems making it sit in the mix as a pure recording"

The Kölsch kit

We ask Rune what instruments and tech became the cornerstone of this record? "I recently acquired this wonderful old hand-built SimpleSizer synthesiser that sounds pretty terrible – but that's what I love about it!"

The SimpleSizer appears throughout the record in different guises, as does an old Lowrey organ originally given to him by his aunt. "I have this obsession with instruments that kind of

don't sound very good. It lends more soul than glitzy, modern-sounding VSTs [would]. That being said, they're harder to mix for sure."

Rune is keen to point out some of the benefits of hardware over software, before telling us that his workflow is primarily in the box. "I have this old Vitalizer from SPL and an old V6 rotary mixer from Allen & Heath, and a few different distortion pedals and reverbs. With hardware I can create something unique-sounding, as opposed to what VSTs offer you these days. There's a lot of plugins that do sound exactly the same, I get the feeling a lot of people are just using the same sample packs a great deal."

But really, the Kölsch universe is assembled in the box; "Ableton Live is the hub of everything I do. I started producing on Protracker on Amiga back in 1993. It had four glamorous mono tracks that you could use. I made this weird contraption that had RCA cables outputting to different speakers so I could make pseudo-stereo tracks. That's where I started sampling records and getting into music production properly. I actually released two records using that setup which makes no sense at all to me."

"I was always in the box because I couldn't afford anything," Rune recalls. "Realistically it was all out of necessity and nothing else. I then got a PC and started producing on that. I remember using the early tracker programs, then afterwards I started working in Logic for a little bit. I'd produce stems on the tracker, then build arrangements and mix in Logic. In around 2004, I switched to Ableton Live, and that's where I still am to this day. I've loved using a lot of these Ableton Max for Live packs and old analogue sample packs. A lot of the time I'll layer them with VSTs that I've used for years. I use Sylenth1 a great deal, but I'll use separate waveforms and layer them to give more energy. A lot of older synth VSTs don't have enough push as I want them to have."

> "I released two records using that DIY setup; it makes no sense at all"

After some unsuccessful experiences with other DAWs, Rune sticks pretty much exclusively to the Ableton universe these days. "I found Ableton really easy to work with. It was fun all the time. Sometimes in Pro Tools or in Logic it becomes more of a chore to get things done! One of the things that really bothered me in Logic was to rearrange all the different plugins, you'd have to re-build the whole thing – you couldn't just move them around (you probably can now). You'd have to build the whole stack from the beginning. I like having happy accidents, which are great in a studio situation. That seemed harder to replicate and duplicate in Logic."

Rune pushes Lennar Digital's Sylenth 1 to higher energy levels with the use of layering

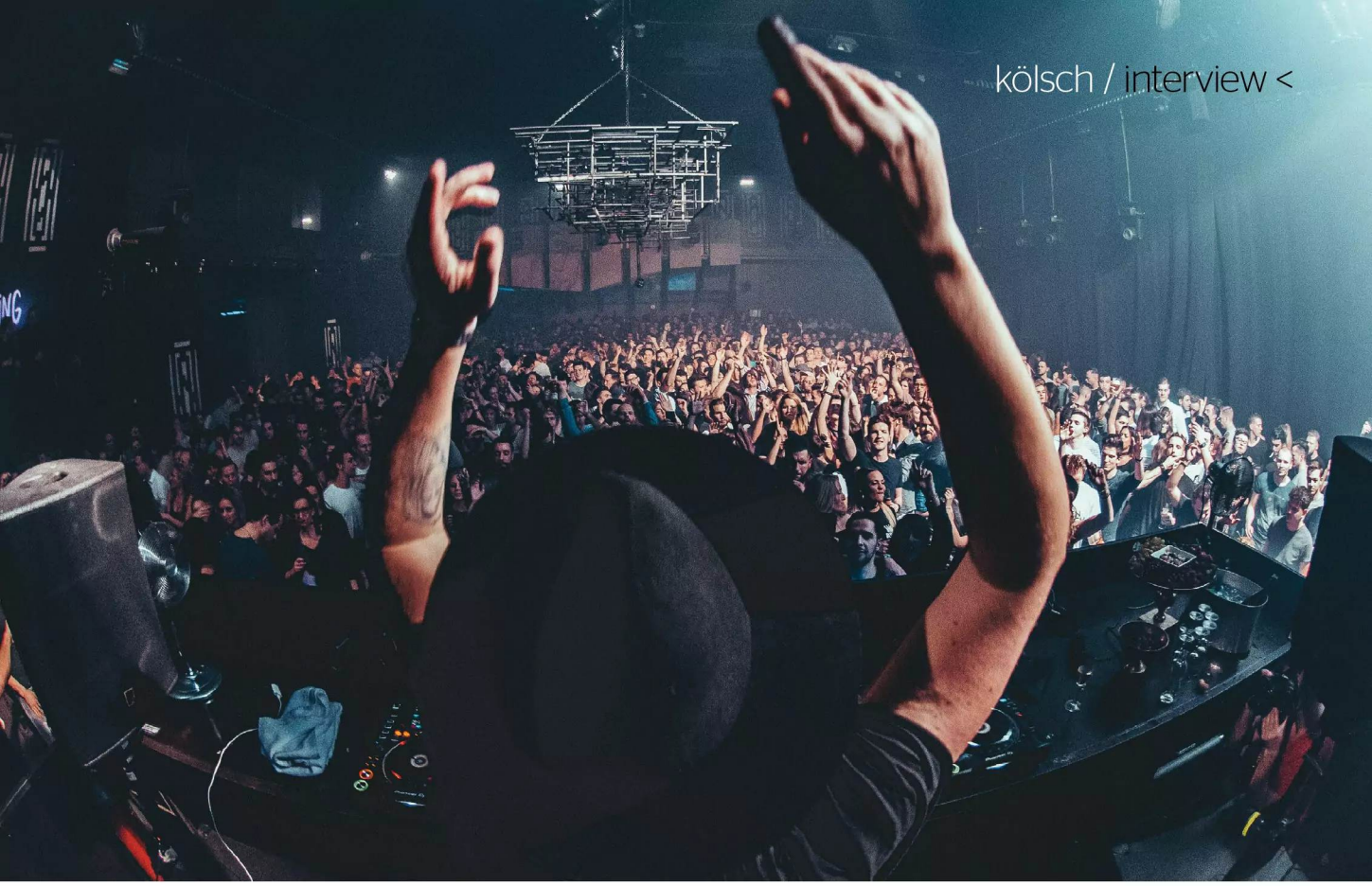
"With hardware I can create something unique-sounding," says Rune – but he admits that plugins offer convenience

Father and son

In terms of the mixing process, Rune has a few saved chains that he tends to rely on across projects. "I have a few chains, and pretty much do the same thing each time. There's EQ-ing, compression, and I still use a lot of sidechaining to keep the rhythm section lively, but there's effects as well to let the music breathe. It's one of the techniques I've kept at from the early 2000s pretty much. Then the limiting aspect, I tend to use Soundtoys plugins for that, they're pretty fun. A lot of the core sounds are basically down to panning around the stereo image, I find that the most challenging. You don't want to lose the mono aspect sometimes. If I'm testing tracks out, I might run it through one of my mastering chains which features iZotope's Ozone and an EQ and IK Multimedia's T-RackS. It's a bit trashy but it's good. I tried one of iZotope's AI mixing assistants, but it doesn't really work for me. I think for some things it might work, but for me it dulled out a lot of things that I'd rather were un-dulled. So it didn't work for me, sadly."

Rune stresses that the AI-assisted mix assistants are useful for those starting out in mixing. "They're good starting points. In my case I applied it after I'd already mixed, so it wasn't that much of a dramatic effect on that. It must be confusing to an AI if there's already stuff in the chain. With mastering generally, I have done it myself before, but all in all I'm just happy to hand it off – after touring as a DJ my ears are absolutely trashed for weeks! I'm doing 150 shows a year, so there's not always the time to get to work on mastering."

From a musical standpoint, the track *Tell Me* had the most revisions. "I think I've got about 10 or 15 versions of *Tell Me*. It wasn't from a technical standpoint, it was more from a musical point of view. I ventured into it with the idea that I wanted it to be a tribute to my father. Then a good friend of mine said 'Look, you have to have *you* as well, it can't just be him.' I went back and re-did it a few times. It became overly dramatic, and quite Hans Zimmer-ish, I didn't like that either because it became an angelic soundtrack thing. I went back and took a lot of that off again. It was trial and error until I eventually got there."



It ends where it began

With the album meeting a positive reception upon its release (available now from Kompakt) we wonder if Kölsch is eager to be performing it out into a live setting, and whether he prefers being in the studio, or on stage? "Oh it varies, it's like two interlinked things you know. My live sets are usually 80% my own material. I love the idea of being able to play something that I've just finished, perhaps in the car to the venue. I love how quick that can be. I used to always love that. You can make progressive music that can end up on the floor fairly quickly. I love being in the studio though."

Rune tells us that for him, the creative process never stops – and even when immersed in conceptually-driven records like *I Talk To Water*, other tracks might emerge organically. "A lot of times I'll be making music pretty much weekly. I realised I was spending too much time on sites like Beatport or listening to promos, so I decided to just take that time and produce a record instead, then I'd have something to play. That record might actually never leave my sets but at least I'd have something exclusive that I could be sure that I liked. I would spend three hours a day trying to find tracks that I was into. It's exceedingly hard to find unique music, let's put it that way."

With his previous trilogy of LPs *1977*, *1983* and *1989* racking up millions of streams, we ask if Rune analyses what elements make a track successful, or if he doesn't let that success guide him. "I was in that game when I was younger in my life, I was making more records under a commercial alias and I realised it didn't make me happy in any way. I've decided not to try and replicate successes. It becomes impossible. There's nothing more depressing than trying to chase something that already happened. I think diversifying and just following what you feel in the moment is the right thing to do. Also, you wouldn't be ahead of the curve if you just tried to replicate yourself the whole time."

Photo by Brian Killian/FilmMagic

It Talks To Water is a uniquely personal work that will resonate with anyone who has suffered a personal loss, and beyond its core theme, the album's lush and deep arrangements, instrumental textures and the multitudes of enthralling hooks, have found favour across the board. "I'd say it's the most vulnerable record I've ever made," Kölsch explains. "All my records have been very personal, and that's the beauty of electronic music. I guess that's where electronic music and classical music tie together. When you have one specific composer making everything, and the emotional connection becomes that much stronger. Whereas with a band, different members have different levels of input, an individual can build it all, and transmit their emotions without words."

Kölsch's *I Talk To Water* is available now from Kompakt Records

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I Talk to Water
bit.ly/klsch_wtr

All That Matters
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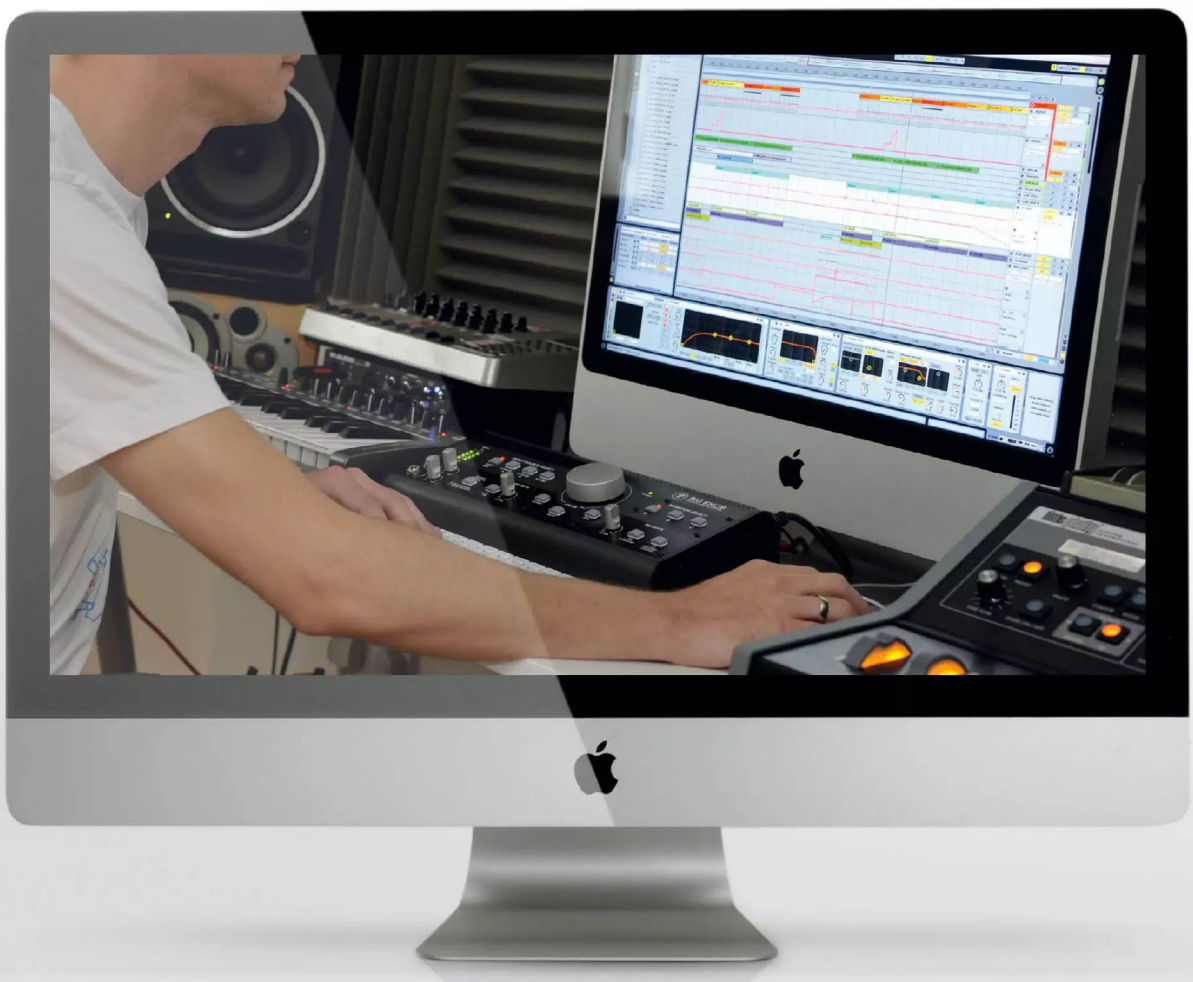

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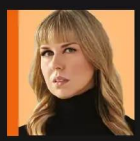
48 Recreating *Autobahn*

We honour 50 years of a record that sparked the electronic revolution



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Sara Simms shows us how to harness organ and piano in deep house

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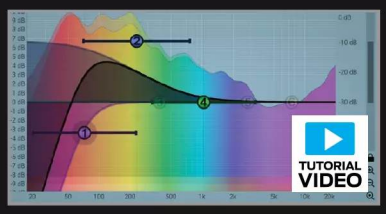
56 Understanding EQ: curve shapes

A deeper dive into EQ studies common curves and beyond

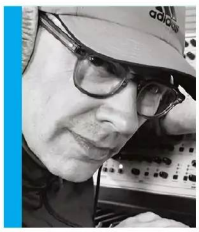


Download the accompanying video and the MIDI/audio files at **bit.ly/cm334downloads**

Sequencer-based drone building with BazilleCM

Continuing our deep-dive into the standout tools in our CM Plugin Suite, we shed some light on drone-making using BazilleCM's sequencer section

Roland Schmidt



Roland Schmidt is a professional programmer, sound designer and producer, who has worked in collaboration with a number of successful production teams over the last 25 years. He can also be found delivering regular and key-note lectures on the use of hardware/software synthesisers and production, at various higher educational institutions throughout the UK

> Before we get started this month, let's just make sure that we are talking about the right kind of drone! We certainly aren't talking about any form of flying machine or underwater sub, but we could certainly use this month's patch to provide plenty of sub-like action.

One of the most powerful features, located at the bottom of BazilleCM's interface, is the sequencer section. Its primary role is to provide a modulation source, but that modulation can be applied to any parameter that is patchable within the BazilleCM interface. If it were connected to the tuning input of OSC1, we could use it as a traditional sequencer, to play a series of notes in a prescribed order, in a looped formation. However, we are going to use the sequencer three times, for the purposes of tone modulation. This means that we can create plenty of movement within our patch, which is exactly the sort of thing that makes a drone more interesting.

Moreover, the drone that we are going to create is at the more playable end of drone business. Play it low, and you have an interesting and pulsating bass drone, but it can also be played higher, to provide interest in the middle of a mix. Or you could use it to add interest to a track when played alongside a chord sequence, as we do in our video tutorial demo.

u-he
BazilleCM

A gem of our CM Plugin Suite, u-he's BazilleCM is our unique version of the company's patchable modular synthesiser, sequencer and mapping generator. It's a beast!
AU/VST 32-/64-bit

> Step by step

Creating a sequencer-based drone with BazilleCM

1 > Let's start things off by initialising a patch on BazilleCM. Open up your DAW and load up the plugin. Once the plugin window is open, move to the central display at the top of the window, click to reveal the drop-down menu, and select 'init' from the bottom. This will initialise the patch.

2 > As part of the initialisation, you'll also hear the FX Delay active in the signal. To make our adjustments clearer at this stage, go to the Delay section (bottom-right) and move the switch to the 'off' position. You can always switch it on again later, if so desired.

3 > Move to the OSC1 section and adjust the Tune pot to a value of 12. Remember that every time you make a pot adjustment, the value will be displayed in the upper-display. Locate the PD pot, which is located halfway down the OSC1 strip, and set this to a value of 36.50.

4 > Next, patch OSC1 to the filter section. Disconnect the existing patch cable from OUT1, and reconnect it to the input of the Filter section. You should be able to do this by clicking and holding on the end of the cable. Once connected, create a second patch cable from the filter output LP6, to the input of OUT1.

5 > Now that the filter section is connected, we can adjust the associated tone elements. Begin with the Cutoff pot, which we need to set to a value of 58, and then adjust the Resonance pot, to a value of 41. The sound we hear now will be quite dull and intense, but this will change very shortly!

6 > It's time to patch in the first section of the sequencer. Using the sequencer's output point which is located on the left, patch a cable to the PD modulation pot, within the OSC1 section. Then set this pot to a value of 70. Adjust the first four sequencer faders to values of 0, 20, 32 and 24.

Download the accompanying video and the MIDI/audio files at **bit.ly/cm334downloads**

> Step by step

Creating a sequencer-based drone with BazilleCM *(continued)*

7 > Locate the second sequencer output point. You will see a number associated with this point, which relates to the note value being played by this section of the sequencer. Change this value, from the drop-down menu, to a value of 4. Then patch a cable from this location, to the first filter modulation pot, within the filter section. Once connected, set this pot to a value of -40.

8 > Much like step 6, we need to assign the next batch of four sequencer faders, to the values 0, 40, 22 and 52. When you play a note, you will see that the sequencer starts to play, but you should also note that this section of the sequencer is running four times slower than the first section.

9 > Locate the final patch output point, within the sequencer section, and create a patch cable from this location to the input of the upper Lag Generator. Then patch an output from the Lag Generator to the second filter modulation pot. Moving back to the Lag Generator, set the Attack pot to a value of 2.3, and the Release pot to a value of 1.6.

10 > In order to hear this element of the patch, we will need to do two things; firstly, adjust and experiment with the remaining eight faders on the sequencer, which will in turn have an effect on the filter cutoff control. By adjusting the Filter Modulation pot, we can increase or decrease the effect applied by the sequencer. Try setting this pot to a value of 66 as a starting point.

11 > Moving to the OSC2 section, set the PD pot to a value of 50. Then create a patch cable from the output of Envelope 2, to the PD modulation pot. Set this pot to a value of 38. We also need to connect the output of OSC2 to the OUT1 section, and reduce the OSC2 volume pot to 30.

12 > Finally, we need to adjust both of our Envelopes. Set the Envelope 1 faders to Attack 12, Decay 50, Sustain 100 and Release 14. Envelope 2 will modulate the Phase Distortion of OSC2, so adjust these faders to Attack 50, Decay 60, Sustain 22 and Release 20.

PRO TIP

THE PERFECT PITCH

The sequencer section of BazilleCM is undoubtedly one of the most impressive and useful tools in the synthesiser's armoury. Not only can it be used to modulate a number of different facets within a patch, but it can be used multiple times, thanks to its flexibility. As we have noted with our patch, we are using the sequencer in three different capacities, to modulate different aspects of our sound. However, the one thing that we have not used the sequencer for, is sequencing notes. This can be achieved in much the same way as the procedure we describe in our tutorial. Simply take the output from one of the sequencer points, and patch it to the pot, which is immediately below the Tune pot, within the oscillator section. If you adjust this modulation pot to a value of 12, this will allow the control of an octave, either side of the central point on the sequencer's faders. By adjusting the faders that are in use on the sequencer, you can create patterns or bass lines, which will be triggered every time you play a note, and the pattern will move around, to reflect the note that you are playing.

Daniel Avery: fond of a good sequencer-based drone technique

RECOMMENDED LISTENING

DANIEL AVERY
DRONE LOGIC
This perfectly formed techno track makes extensive use of a sequencer, modulating the cutoff frequency of the filter
▶ spoti.fi/3PuMeVT

HEAVEN 17
LET ME GO
This impressive pop track from the '80s, uses an analogue sequencer with lag, that runs throughout the entire song length
▶ spoti.fi/3Vr89AN

Recreate Kraftwerk's iconic *Autobahn*

Andy Jones

Andy has been writing about music production, studio gear and technology for over 30 years, having edited magazines including *Future Music*, *MusicTech* and (twice!) *Computer Music*. He says we can look forward to several 'How to sound like Gary Numan' features in the course of this series

This year marks an incredible 50 years since Kraftwerk released *Autobahn*, the track that brought electronic music to the masses, and even the charts

> The world of music in 1974 wasn't prepared for an electronic music revolution, nor for that revolution to take place by way of a track that lasted for 22 minutes and 45 seconds... about a motorway. But that's what happened.

Up until '74, synth music had mostly been about Wendy Carlos' take on Bach, early prog rock and noodling sequences from Berlin. With *Autobahn* – or at least an edited version of it – Kraftwerk took electronic music into the pop charts, and started a seismic journey for a band that would go on to influence many genres of music over the following five decades.

Autobahn the track came from the album of the same name, which was Kraftwerk's fourth release after three albums of psychedelic folk recordings. While not a pure electronic track (there's some wonderful flute and guitar in it) its insistent bass line, leads, beats and even car horn were synthetic enough to give this 22-minute opus 'electronic' status. It set a synth blueprint for future Kraftwerk releases, with the band quickly phasing out any signs of acoustic instruments in later works.

In this tutorial, we'll recreate some of the key elements from the track including the filtering, detuned lead, repeating/delayed bass and even some of the beats using ZebraCM. We didn't attempt the vocoder parts or flute, but wouldn't be surprised if ZebraCM could do a pretty good stab of the latter if you pushed it. Anyway, happy birthday *Autobahn*!

> Step by step

Recreate Kraftwerk's *Autobahn* on one synth

1 > The synths Kraftwerk used were legendary – Minimoogs and ARPs – but fairly basic, so we're going to be using a lot of sawtooths. For our lead sound, start by selecting the Init preset, because that is just a sawtooth wave.

2 > Turn the volume of the second oscillator up (it will probably be zero when you load in the Init sound) and then adjust its pitch so that it is four semitones above that of oscillator 1. We have the basis of our fatter, detuned lead sound already.

3 > It's still a bit too punchy, so we have to adjust the envelope settings, most importantly the Release value (set to around 45) so the lead fades out slower. We've also nudged the Attack value up to around 15 so it doesn't punch in so quickly.

4 > The crucial part of the lead is the way it filters out in a kind of 'eow' sound. This is done my modulating the filter frequency with the envelope so it basically follows the release shape. In the filter area select the envelope (Env 1) to modulate the Cutoff and set their respective values to around 61 and 79, but experiment to taste.

5 > A huge element of *Autobahn* is its use of delay effects, as we'll see shortly with the bass and beats. It's not so prevalent on the lead, but we're going to add some delay and reverb just because it helps the lead cut through the final mix.

6 > Now to the bass. On another track, load up another instance of ZebraCM, and we can (slightly) cheat here by loading in a simple bass preset. However there is still work to be done, and the first thing is to simplify this simple sound yet further by removing the second oscillator, taking its volume down to zero.

> Step by step

Recreate Kraftwerk's *Autobahn* on one synth (continued)

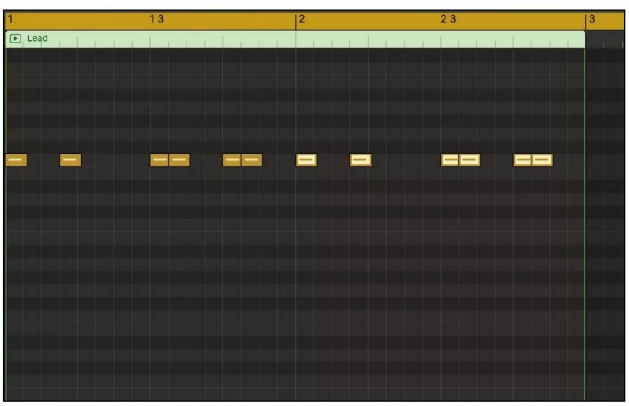
7 > Again, the delays are important. The original bass uses a lot of delays to keep it trundling along that motorway, and here we're setting it to 1/8 on left and right for a similar-ish sound.

8 > The bass changes quite a lot throughout the track, and a lot of this simply comes by way of the filter opening. You could assign a very slow LFO to modulate it, or slowly record manual movements as automation, giving the bass a gradually more punchy sound.

9 > While we're here – and just to show how flexible ZebraCM is – we might as well do some of the electronic beats on *Autobahn*, too. Load in the Clicky Click preset on a third track and instance of ZebraCM, and play some higher notes. Set the filter to around 84 to get the kick to cut through a little more.

10 > A good trick here to achieve some of the rhythmic variation that Kraftwerk got throughout the track is to occasionally up the Decay value on the kick for a couple of notes. This gives it slightly more emphasis and crunch.

11 > Now we'll load in Splashy Snare on a fourth track and instance of ZebraCM. Again set the filter to around 85. Feel free to put the delays on both kick and snare just to liven up the beats.



12 > If you program in a pattern like the one shown for the snare, you can simulate the 'breakdown' of *Autobahn* where just the beats play in an insistent way. That's it, you have some main ingredients for the track. Be sure to check out our audio files in this issue's download section to hear our recorded take on the track.

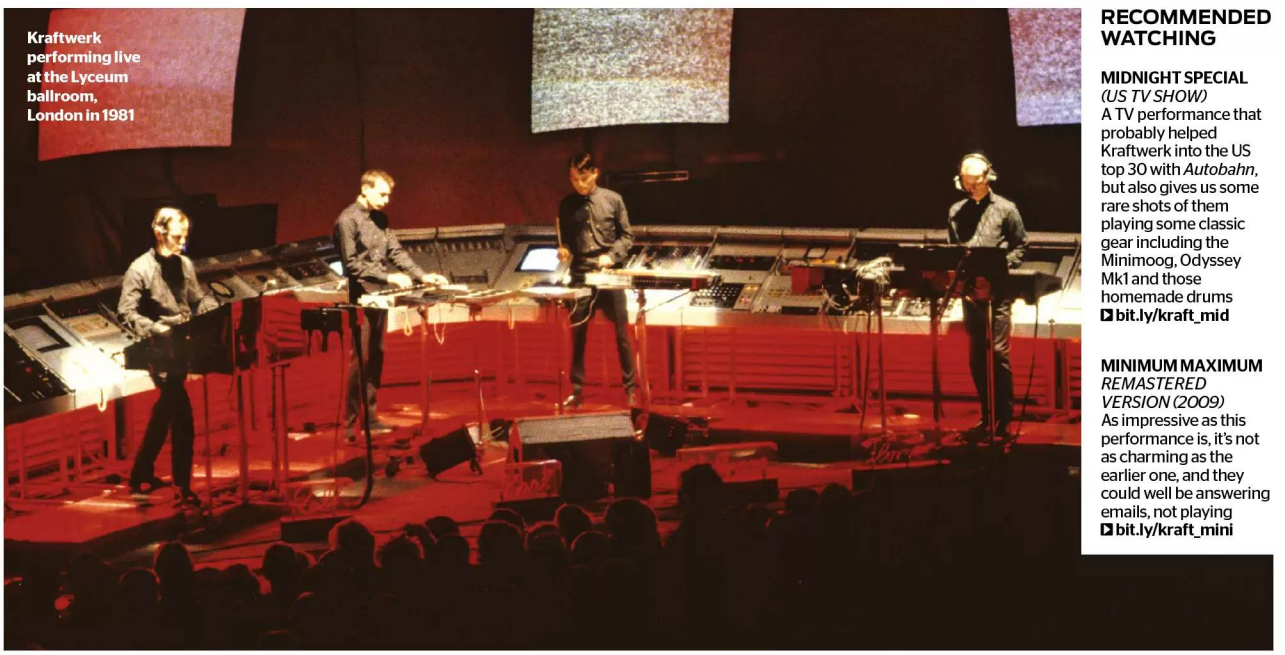
PRO TIP

THE REAL DEAL

If you want to get more authentic with your *Autobahn* sound, or the Kraftwerk sound of that early '70s era, you could, of course, use the original gear – they didn't have the luxury of ZebraCM, after all! So you're looking at a Minimoog for the bass notes and an ARP Odyssey for some of the leads; a couple of hardware synths that will cost you a fortune. But this is *Computer Music*, so of course you don't need the hardware, and there are plenty of software emulations of those two classics around. Other gear included two phaser effects (the Schulte Compact Phasing and Mu-tron Bi-phase). Phaser plugins are many and varied, but the Mu-tron has been emulated by Arturia (see right). Both of these effects were used on the synths, so you can apply them directly (to the lead especially). Beats are a little more difficult to create directly as Kraftwerk used their own often DIY machines created from various parts so you're unlikely to find direct emulations, but we think we got pretty close just using a VA synth to recreate the kick and snare. And if you've followed our tutorial you'll realise that the final piece in a jigsaw is a good stereo delay... on just about everything.

The Arturia Phaser Bi-Tron will give you a pretty decent recreation of Kraftwerk's original Mu-Tron Bi-phase

Arturia's Mini V is a faithful remake of the iconic Minimoog; a synth that Kraftwerk adopted for the bass parts of *Autobahn*



Kraftwerk performing live at the Lyceum ballroom, London in 1981

Fraser Gray / Alamy Stock Photo

RECOMMENDED WATCHING

MIDNIGHT SPECIAL *(US TV SHOW)*
A TV performance that probably helped Kraftwerk into the US top 30 with *Autobahn*, but also gives us some rare shots of them playing some classic gear including the Minimoog, Odyssey Mk1 and those homemade drums
bit.ly/kraft_mid

MINIMUM MAXIMUM *REMASTERED VERSION (2009)*
As impressive as this performance is, it's not as charming as the earlier one, and they could well be answering emails, not playing
bit.ly/kraft_mini

Download the accompanying video and the MIDI/audio files at **bit.ly/cm334downloads**

Sara Simms

Sara Simms is an acclaimed DJ and producer from Toronto who's played some of the world's most prestigious venues and festivals alongside artists like Carl Craig, Victor Ruiz and more. She owns her own record label, Simmetry Sounds which releases cutting-edge techno and house tracks crafted by the next generation of electronic music producers

How to use classic dance sounds in deep house

Let's look at creating organ and piano sounds for our tracks – two staples of the deep house genre

> Organs and pianos are two of the best loved sounds in dance music, and continue to remain popular in the music of today. Producers like MK, Marshall Jefferson, Liquid, Kerri Chandler, Todd Terry, Masters at Work and countless more created hits crafted with piano as a leading element.

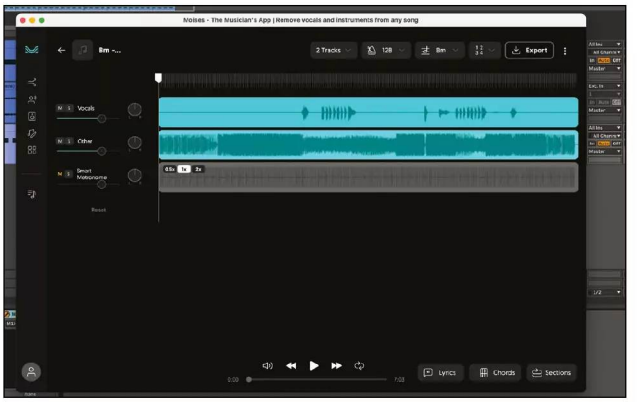
Contemporary artists like D.O.D., ESSEL, Huxley, Weiss, LP Giobbi and David Penn, also produce tracks focusing on the piano house sound. From underground house and techno records to award winning pop anthems, pianos and organs continue to be fundamental components of timeless tracks. A key factor in creating a successful piano track is the quality of the chords, and the production techniques used to process the sounds.

Retro sounding piano and organ house tracks are often paired with vocals, and a great way to make a unique track is to use some AI-generated vocals. In this month's tutorials, you'll learn how to make an organ house groove and add AI vocals, and how we created a house progression using Mixed in Keys' Captain Chords Epic.

> Step by step 1. How to make an organ house track with AI vocals

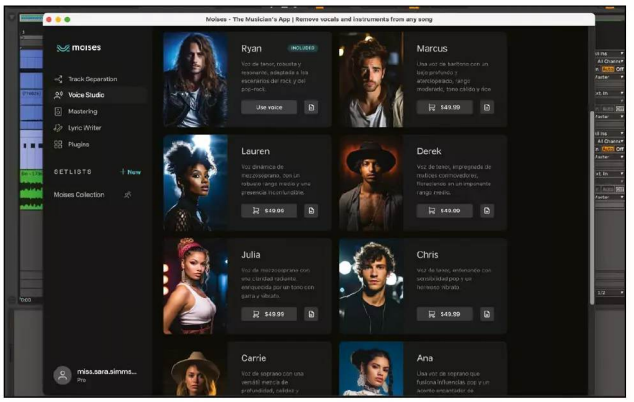
1 > Start by setting the BPM in your DAW to 124. Choose a big kick drum, one that's both full and deep. The kick drum level should be set at around -5 or -6 dB. Select a few simple percussion loops, including a hi-hat top loop, an open hi-hat, and a clap and add them into your session.

2 > Create a blank eight-bar MIDI pattern, add a synth (we're going with Omnisphere 2) and program in a note on the root note in the key of your track. Find a warm pad sound. For us in Omnisphere, we've gone with the Hybrid Warm String Section preset. Freeze the track and create a new blank audio track. Press Command and drag the frozen track to a new audio track.



3 > For the organ bass, we add Korg's M1 and select M1 House Split. Next, we make a blank MIDI pattern and create a simple bassline that plays in between the kick drum hits, on the offbeats. Program a musical idea that repeats for the first three bars, and changes on the fourth. Add groove to the organ by varying the length of the notes.

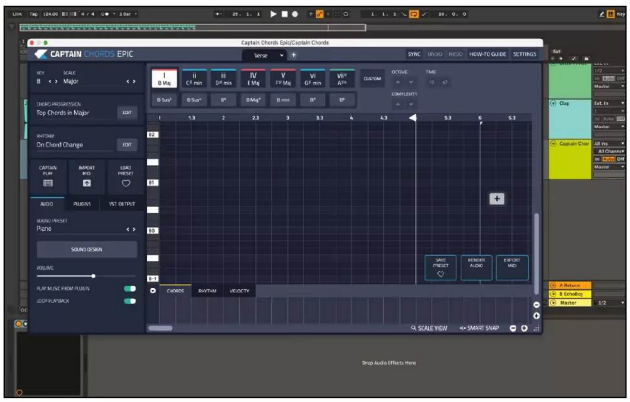
4 > Next we'll use Moises, an AI app that you can try for free to add vocals. Find vocals in the key of your track from an existing song. Use Moises (moises.ai) and upload the track by clicking track separation/new. Once done, export the vocals. Click on Voice Studio and choose a voice to use by clicking 'Use Voice'.



5 > Drag your vocal-only track to the Voice Studio in Moises, select a voice, and click 'Process Vocals'. After the track is processed, drag it into your DAW and warp the vocals if there are any timing issues. We use Ableton's Warp Mode and choose Complex. Add a slap delay effect to the vocals by creating a Return Track and adding Echoboy.

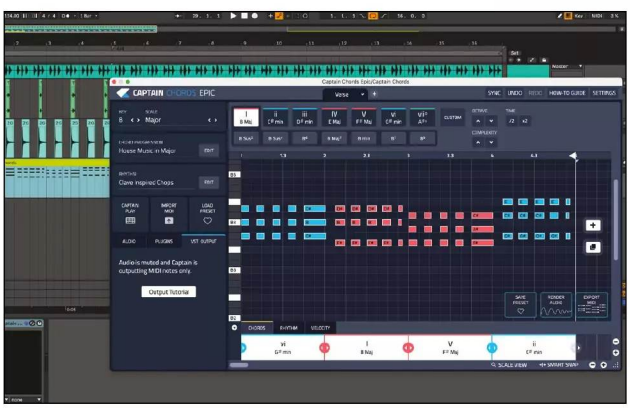
6 > Send the vocals to a delay effect on a bus channel. Choose a 1/16 delay, which helps the vocals blend into the track. Keep the feedback set to zero. Roll off the low end below 250 Hz, and high end above 4 kHz. Set the mix to 100% wet. Reduce the Width (if that option is available). Lastly, increase (or add) the saturation.

> Step by step 2. How to make piano house with Mixed in Key's Captain Chords Epic



1 > Start with the tempo in your DAW at 124bpm. To make things simple, you can reuse the drums from the previous tutorial or create a simple groove by adding a kick, clap, and hi-hat patterns. Mixed in Key's Captain Chords Epic is a fantastic tool for idea generation. Install and choose the key and scale you'll write in and press 'Go'. In the Chord Progression section, click Edit.

2 > In the Banks tab, select 'Top 20' and in the Progressions tab, select 'House Music in Major'. In the chords section, select your favorite chord progression. For a simple, straightforward pattern, choose Vi-i-V-ii. In the Rhythm section, select Edit. In the Filter section, select genre, and banks section, choose a bank like 'Everything' or to be more genre specific, Deep House.

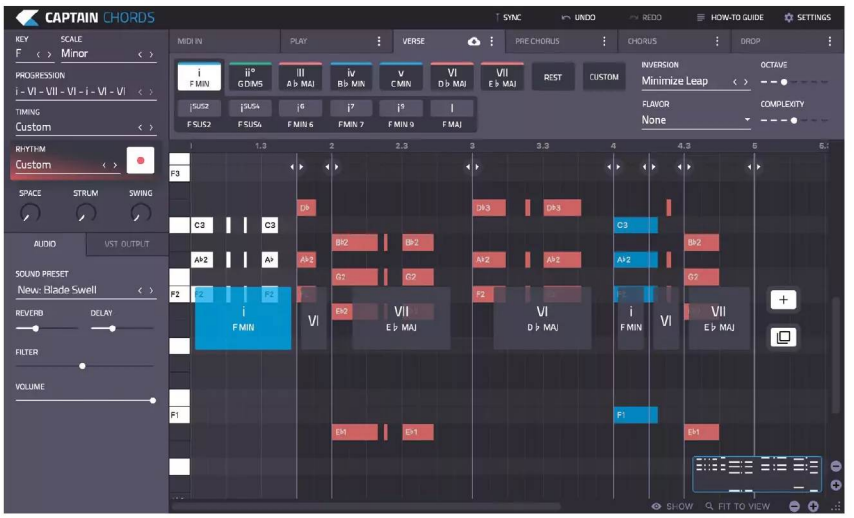


3 > In the Rhythm drop-down menu, scroll through the presets and choose a syncopated rhythm for your chord progression. 'Clave Inspired Chops' is a good one to start with. Once you're happy with the chords, export the MIDI pattern by clicking on Export MIDI and dragging the clip to your DAW. Navigate back to the plugin, and select VST Output.

4 > Add a new MIDI track and choose a piano instrument. There are many great piano plugins on the market, including the classic Korg M1, IK Multimedia's Pianoverse Addictive Keys, or Native Instruments' Hybrid Keys, Noire, or Alicia's Keys. On the MIDI channel with the piano VST, route the MIDI from Captain Chords and set the Monitor to In.

5 > Make the piano sound mono (we add Ableton's Utility and select Mono). Add an EQ and roll off below 100 Hz, and above 6 kHz. Boost in the high end around 5 kHz. Subtly compress the piano with your EQ, (we're using FabFilter Pro-C 2) using a fast attack and release. Add a little extra compression as a sidechain and automate it during the drop only.

6 > Duplicate the piano MIDI track and remove the Utility plugin to make it a stereo track. Change the EQ by boosting in the high/mid frequencies around 8 kHz and use Dynamic EQ. You may want to roll off high frequencies above 18 or 20 kHz. Bring the volume of the stereo piano down to about half the volume of the mono piano.



Korg M1 VST and Mixed in Key's Captain Chords form an excellent house-chord generating toolkit

RECOMMENDED LISTENING

ESSEL
SWEET LIES
(EXTENDED MIX)
This is a beautiful piano house track, it features a rich-sounding piano and an emotive chord progression
spoti.fi/3x60VrZ

D.O.D.
SET ME FREE
This modern house anthem uses a classic organ sound that contrasts perfectly with the track's unforgettable vocals
bit.ly/4cimzcJ

PRO TIP

USING COMMON TONES IN CHORD PROGRESSIONS

The keys (no pun intended!) to writing a great piano house track are using the right source sound, and creating a memorable chord progression. If you'd like to achieve the classic Korg M1 house piano sound, try the Korg M1 plugin and look for the preset Piano 16. The processing you use on the chords is secondary to the chord progression itself. While software like Captain Chords and other generative software does make chord-writing easier, it helps to learn the theory behind chord structure. A chord consists of a triad, which is made up of the root note of the scale, the third and the fifth. Extensions can be added to chords, such as 7ths, 9ths, 13ths, and 6ths. When moving from chord to chord in a progression, you'll want to be sure to use common tones in the chords, which are notes that stay the same when you move to the next chord. This technique is also called voice leading, and it helps to keep the chord progression sounding smooth. If you use extensions in your chords, you'll always be able to find a common tone between them. For example, 1 and 3 are good common tones, as are 3 and 7, and 3 and 1. For a thicker chord sound, add notes in a lower octave.

Download the accompanying video and the MIDI/audio files at **bit.ly/cm334downloads**

Jon Musgrave

Jon is a London-based platinum award winning mixer, producer, composer and club remixer with a diverse CV that spans dance, pop, rock and music for media. He's also a long term contributor to *Computer Music*. Jon usually handles final mixdowns, which is why we've got him to share some of his pearls of mixing wisdom here

Understanding EQ

Understanding EQ is key to getting a perfect, well-balanced mix, and this month we study the fundamentals of the process

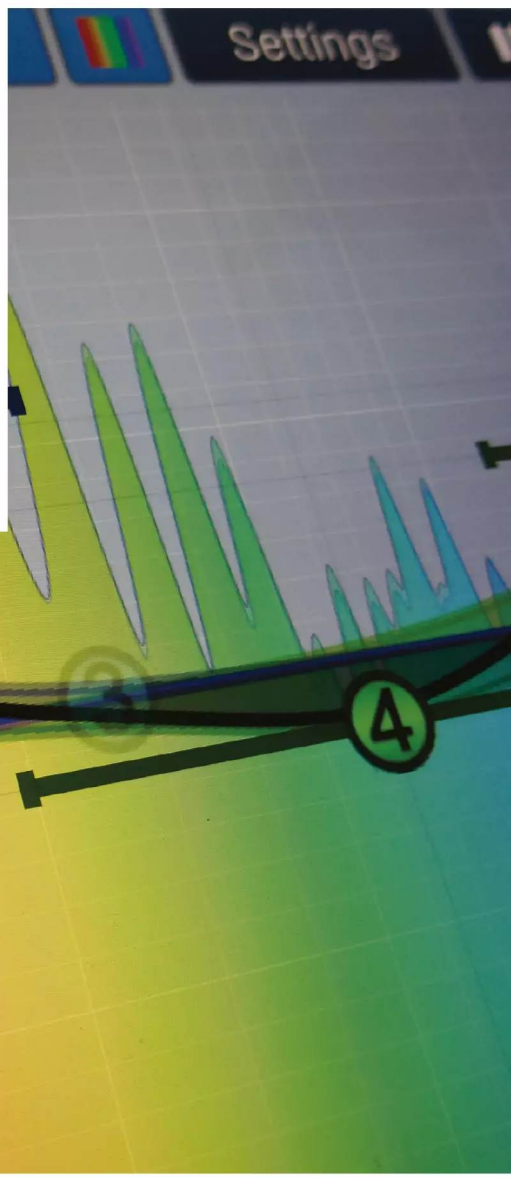
> Equalisation (EQ) is one of our most important mixing tools, but it's important to use it in ways that improve our overall mix, and understanding its various forms can really help with this.

In our first EQ mixing masterclass *[issue CM318]* we looked at some basic techniques that can help you establish the frequencies you want to EQ, including sweeping, filtering and frequency analysis. If you've not read that masterclass, take a few minutes to check it out.

This time around, we move ahead and look at the EQs themselves and how their shapes and behaviours can assist us getting the results we want. Rather than discuss how to EQ specific instruments, we'll focus on the underlying behaviours, which you can then use for your own decisions.

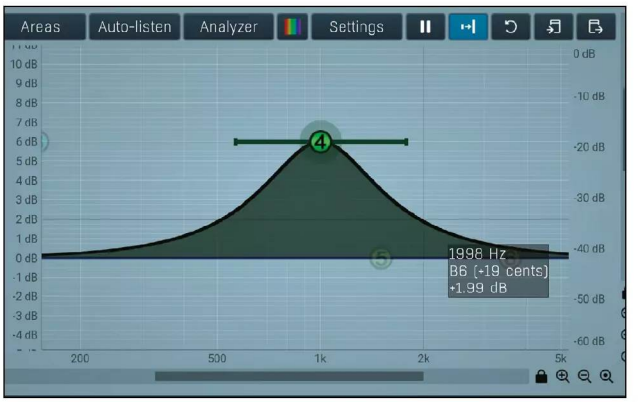
There are lots of EQ plugins available, and sometimes a basic design can get the job done. However, in this masterclass we'll need something a bit more flexible, so seek out an EQ plugin that includes peak and shelving shapes as well as high- and low-pass filtering. Ideally all bands should have adjustable Q. If your DAW doesn't deliver, there are some excellent freebies and we use one in the walkthroughs.

Of course, this does exclude a number of classic analogue emulations, and we're certainly not ruling these out. In the Pro Tip we look at a few popular designs and what makes them special. Let's get to it.

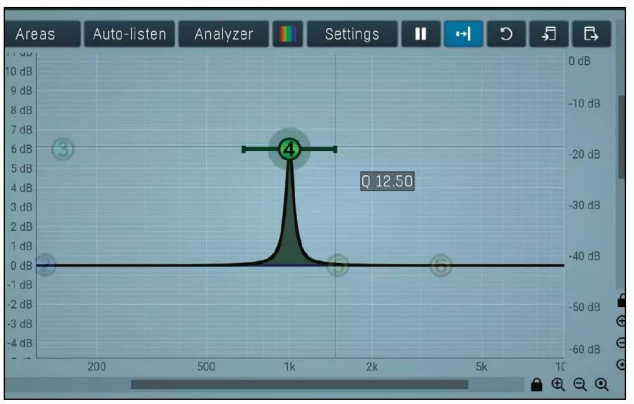


> Step by step Understanding EQ

1 > As suggested in the intro, a flexible EQ allows you to create a variety of shapes. Here, we've loaded up a flexible and free EQ (Melda MEqualizer). This has all the typical shapes you need including peak, shelving and filters all with adjustable Q. There are also some handy extras (notch and band pass) and a frequency analyser.



2 > In a typical mix, we expect to use all three main filter shapes (peak, high/low shelves and high-/low-pass filters) with peak shape being the most popular. For a basic peak filter set the Q to 1.0. You'll see that if you apply 6dB of gain the filter is noticeably affecting an octave either side of the selected frequency.



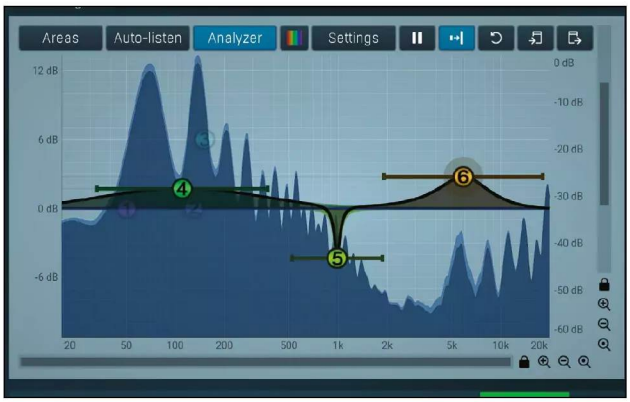
3 > From this point, try lowering the Q. You'll see the filter gets gradually wider until it affects most of the spectrum. Meanwhile, increasing the Q value creates a narrower filter. Get the Q value above about 10 and you'll have an extremely sharp peak that's great for cutting but will impart a very ringy or honky sound when boosting.

4 > Shelving filters come in both high and low incarnations, affecting the spectrum above or below respectively. The selected frequency is a midpoint of the transition, so here by applying +6dB at 150Hz we actually get +3dB at 150Hz. What happens either side of that is set by the Q, which affects the slope of the transition.

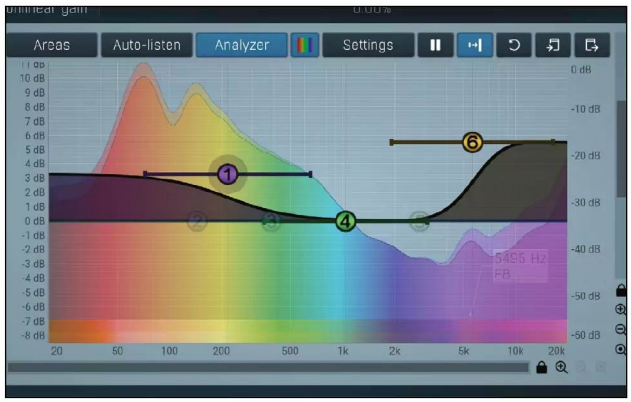
5 > Being able to adjust the slope (Q) makes the shelf design incredibly flexible and potentially extreme. Try some lower values and you'll see it creates a gradual ramp, while higher values often impart over or undershoot combined with a resonant peak that exceeds the gain amount. Modest levels of over or undershoot can be handy.

6 > Finally, we have high- and low-pass filters, and these offer the most aggressive way to cut frequencies above or below certain points. These come in different slope (steepness) options and this time the selected frequency is the -3dB point. Be aware that if you have adjustable Q, higher settings will add a resonant peak.

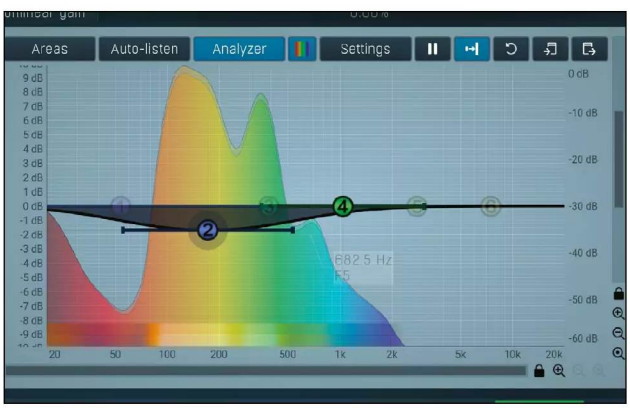
> Step by step Understanding EQ *(continued)*



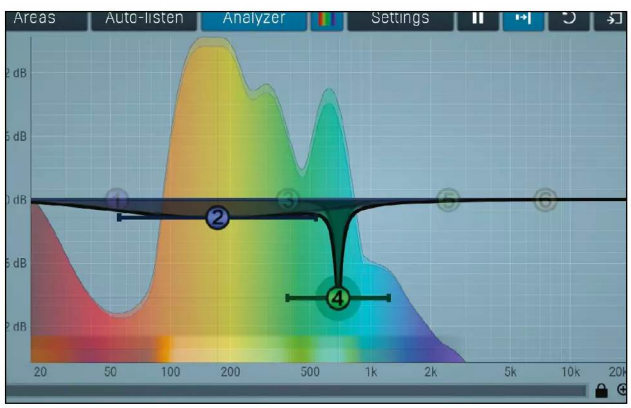
7 > There's an old adage for EQing that suggests we should boost using a broad shape and cut using a narrow shape. This certainly doesn't apply in all cases, and we'll look at more unusual EQ treatments in a later masterclass. Nevertheless, whatever EQ you apply, bypass and A/B as you go to make sure you're making things better.



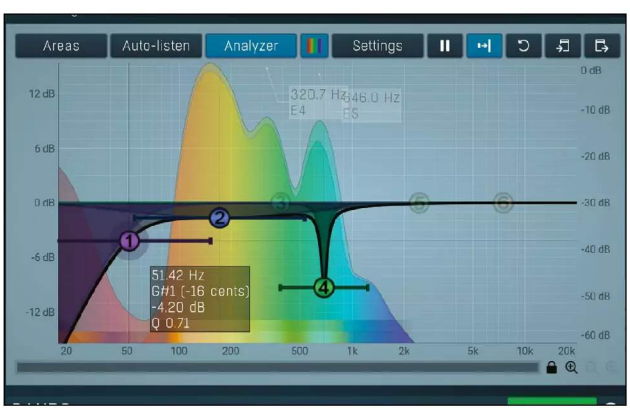
8 > Shelves are a good place to start as they offer a simple and natural sounding way to change to the lower and higher frequencies. This is great for sub groups, overall mixes, or basic enhancement of sounds. But you'll reach a point where it no longer provides the differentiation you require.



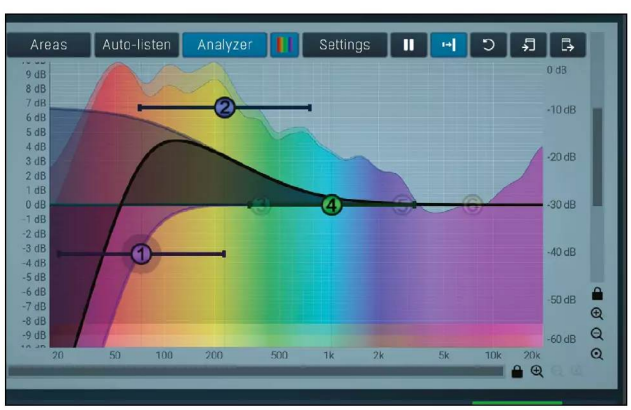
9 > This is where peak filters become more attractive. These offer you more precision, so you can think about adding a broad boost in the upper mids (2-6kHz) to enhance lead instrument attack or presence, or a broad cut in the low mids (250Hz-500Hz) to remove boominess from a vocal or thickness from a pad.



10 > Now you've taken this step with a peak filter, why not use it to fix an annoying frequency or resonance in something? Say, a piano. Use the sweeping technique and frequency analyser to pinpoint the problem area. Then use a narrow Q (10 or higher) and large cut (-10dB or more). This will sound pretty natural and will minimise the problem.



11 > For problems at either end of the frequency spectrum, use a shelving cut for modest more natural-sounding changes and a filter when you need something more aggressive. In a mix, the most common technique will be using high-pass filters to remove rumble from live recordings or reduce sub bass (20Hz to 60Hz).



12 > Finally, sticking with the low frequencies, combining a high-pass filter and low shelf is also a common technique particularly suited to bass sounds. By tailoring the shelf shape to either enhance or curtail the bass region (60Hz to 250Hz), we can then fine tune the subs, creating a tailored, lopsided curve.

PRO TIPS

CLASSIC EQS

Given the power available in a modern, flexible DAW EQ, a more limited, hardware emulation might seem like a backward step. But the combination of familiarity, sound and behaviour mean they're still very much in the running. Let's take a look at a few examples.

Neve's 1073 module is revered for its creamy sound, but its mid-band EQ also has its very own character, and a bandwidth that gradually changes both with gain and frequency. At the highest frequency (7.2kHz), maximum gain (boost/cut) delivers its most focused shape, while at the lowest frequency setting (360Hz), maximum gain delivers a broader bell shape.

Gain-related Q width is a feature you'll find in plenty of other classic EQs. API call this proportional Q and it's one of the peak filters on API's 550 series. Meanwhile, the much revered, inductor-based Helios 69 EQ takes thighs one step further. Here, the peak and trough switching of its mid-band delivers broader boost and narrower cut outcomes.

SSL are well known for their clever and powerful EQ designs, and none more so than their G Series. The peaking filters employ an interrelated gain and bandwidth where higher gain results in narrower bandwidth. Meanwhile the shelving bands incorporate a modest amount of overshoot or undershoot for more precision.

CATCHING FLIES

Manipulating samples into abstract new forms, while keeping a keen melodic sense firmly in his grasp, Catching Flies has emerged with a creative identity all of his own. Led by the circularity of tidal ebbs and flows, his latest release, *Tides,* shifts between moods, fusing lush string ornamentation with dynamic undercurrents

> Learning his craft at the age of 16, before going on to gain recognition for his sample-based flights of musical discovery, Catching Flies – aka George King – is positively giddy at the prospect of his latest record, *Tides* being released. This second album (on sale now) is a hook-laden, aural labyrinth, dense with evolving textures and liquid beds, assembled from often entirely unfamiliar starting points.

We spoke to George to learn more about the making of this album, a follow-up to 2019's *Silver Linings*, and his approach to music-making in general. First of all, we wanted to know where George starts on a practical level when sitting down at his home studio desk. "I think in terms of hooks. I love making instrumental music. I grew up listening to instrumental jazz and trip-hop in its golden era. Records like *Cold Water Music* by Aim were big influences. The mixture of that and admiring pop and catchy music is that you try and create these vocal hooks but you end up doing it with instruments."

Created in George's home studio, the album's development was in sync with the rhythms of his domestic life. George would often leave the studio to ponder the record's themes further. "I spent a lot of time in nature writing it. I got into going to a different seaside town every Monday. I wanted to refresh my creative process. Although I do a lot of work in my studio, it can be nice to be sort of 'shocked out' of that environment and be somewhere totally different. I find writing while I'm touring to be helpful. Not for getting complex arrangements down but just logging those initial ideas."

Tides had no contrived 'starting point', instead evolving naturally from King's experimentation. "I'm always trying to push it into places where it wouldn't necessarily belong. With sampling, a lot of the records I get are from charity shops. I love it when, say, I'm listening to a whole record of '70s prog rock, and I find one isolated harp note. I can take that and completely remove it from its context. I'll try and give it a new setting."

Adrian Bassanelli

George and Paul

George's sampling process is rooted in very precise organisation. "Generally what I do with samples – whether they're from a record, from YouTube or from something I've recorded myself while I'm out and about, is that I catalogue it all by what it is. I have sample folders called things like '2023 – Guitars' and then there'll be a load of guitars. Kalimba – same thing. Therefore it means that when I'm in the zone, making music, and feel like a track needs a kalimba, I can quickly bring up a load of samples. I'm able to find things easily."

The next job is to detach them from their original context as much as possible. "I'll manipulate them and play with them – taking them out of their form. A lot of the stuff you hear on the record might have evolved really far beyond what it was originally. So, it might be a harp sample but the end result doesn't sound like a harp. It sounds like an ambient drone."

George's DAW of choice, Logic, has several useful tools for this purpose, namely Flex Pitch and Flex Time. But, a real secret weapon is an open-source sound transformation plugin called PaulXStretch. "It extends sounds. So, if you put a 30-second recording of a harp in there, it will extend it for an hour. It won't mess with any of the transients within it, so it doesn't sound terrible, it sounds like a really beautiful, long piece of drone. Sometimes I'll put something into that, then put it back into Logic and go through it and find little bits that work. Elements where the harmony becomes interesting."

The colourful *Halo* and the instrumentally dense title track are cited as a couple of tracks that took longer to get right than most. "The title track, *Tides*, was the one that took the most iterations. I find a lot of the time that music goes through a lot of different versions. If I find a sample that I really like, then the possibilities are infinite in terms of where it can go. So, sometimes I'll just do a very quick 'throwing stuff at the wall' arrangement where I try out different chord progressions and moods until I find something that makes sense," George says.

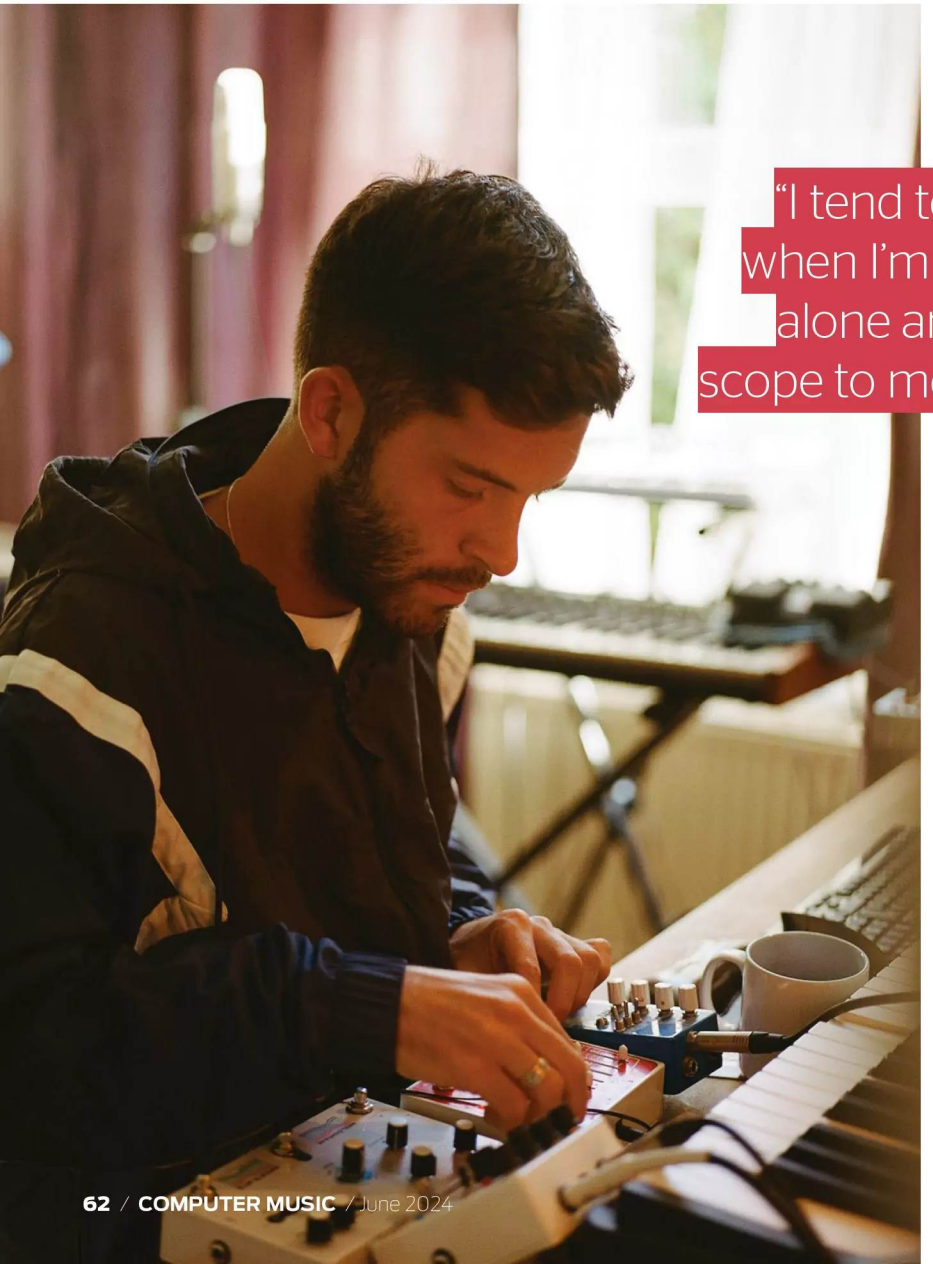
"If I find a bit of sound that I love and is really interesting to me, then I take a lot of time going round the houses to find the one thing that sits right with me. Ultimately I want to do that sound justice. So, generally speaking, all the tracks go through a lot of different versions. Some less so than others, for example, the track *Friday Lake* was a pretty quick one".

George points to the blissful *Snow Day* as his favourite piece on the record, "In terms of composition, *Snow Day* felt like the biggest departure from what I'd done before. It's a three-and-a-half-minute piece of music that goes through various different stages and journeys. Musically it's a fair bit more complex than what I'm used to doing, with the string section and lots of evolving elements."

Another key tool deployed by George when making *Tides* was Celemony's Melodyne, which was used to change the pitch of individual samples. "[With Melodyne] I can put something in there, then change the notes that are playing to make it fit the composition I'm making. Generally, a lot of the time I'm chopping stuff and reversing stuff. Reverse might seem like a very obvious tool but I use it all the time. It's an instantaneous way to get very different results."

Musical mistakes

Despite previously working in a rented studio, George now works exclusively from home. "I use solely my home studio. That's out of choice – I did have a studio out of the house for a while but for me the creative process is so entwined in everyday life. It makes sense for me to work on a song for a couple of hours, then put a wash on, then maybe go for a walk around the park. That really informs the music. It's a very naturally evolving, organic process."



> "I tend to work best when I'm completely alone and have the scope to mess around"

George continues, "When you rent high-end studios they don't have natural light because of the sound-proofing. Natural light is really important because a lot of my music is based in nature and the real world. It makes sense for me to be making it in one of those settings. I also found that going to a studio every day put a lot of pressure on it, because I felt like I was going to work and I had to make something good. This way round I can kind of dabble with stuff and if it's not working I can go and do something else."

The freedom to make mistakes is also a crucial consideration. "I've had the privilege of using some big studios with engineers, shiny preamps, and big desks. At that point, my imposter syndrome kicks in. I tend to work best when I'm completely alone and have the scope to mess around and make mistakes."

Mistakes are, in fact, behind most of the album's key moments. "The most interesting moments came completely from mistakes. For example, I'll have something looping in Logic then I'll open something by accident and hit upon an interesting juxtaposition. Without trying to ruin the magic, a lot of this is down to chance, trying things out and experimenting."

Orchestral growth

A key aural component of this record is the ornate and often sweeping string

Photo: Kai Blamey

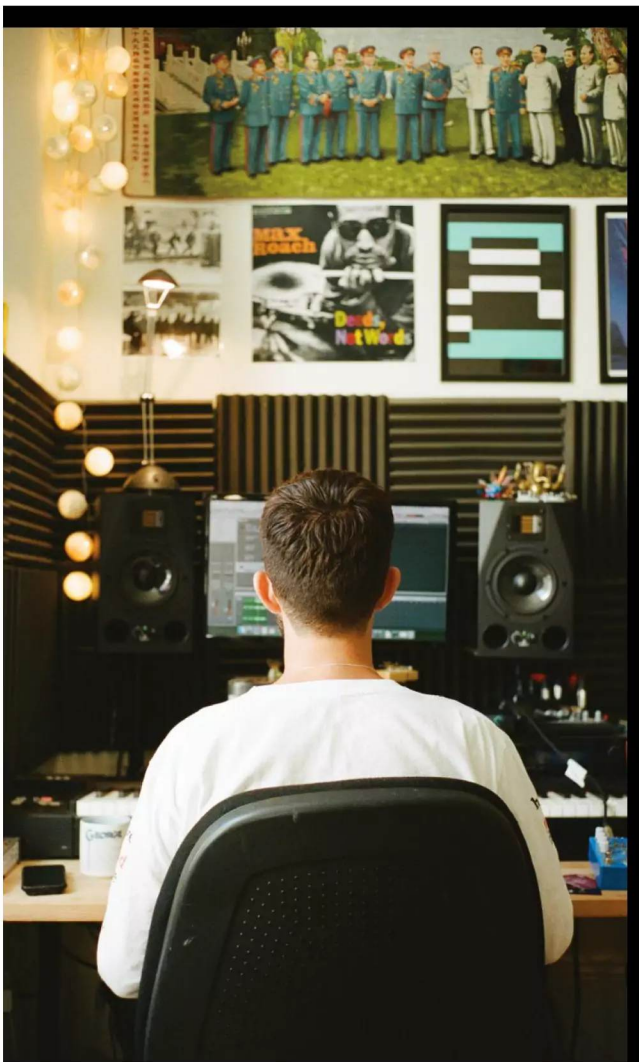
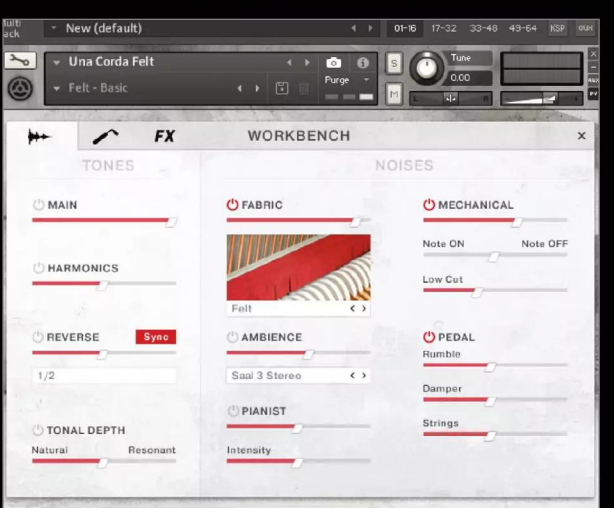


Photo: Kai Blamey

Catching Flies on making synths and keys sound more interesting

In the course of our interview, Catching Flies was kind enough to share a couple of his secret mixing tips which he relies on to enhance some of his core elements. He starts by telling us some sure-fire ways to breathe life into digital-sounding synth sounds...

1 "This technique is very simple but I use it on most tracks. I 'bounce in place' the chords part I have played on a synth, and then reverse each chord individually and keep it as a layer. You can then also put effects on the reversed layer to create interest (pitch shifting it up +12 works nicely!)."



2 "Layer your synth and keys sounds with 'mechanical noises.' Here I've used Native Instruments' 'Una Corda'. You turn the 'Main' piano sound off, turn the mechanical/fabric/pedal noises up to taste and layer that with a synth to add a humanised feel to sounds."

ornamentation, provided by string arranger Thomas Lea. We wonder what prompted George to seek him out? "What I find interesting about strings is that they're the only thing aside from the human voice that can bring that range of emotion to the music for me. Strings have a similar frequency and emotional range as the human voice. With Tom, the way I worked it is that I would hash out some very rough string parts on a MIDI instrument to give him an idea of where I thought he would go, and he would then flesh that out."

Thomas, working by himself, built up orchestral textures that emphasise and enhance the record's most affecting moments. "He does it all himself, so he can create what sounds like a quartet with just him and his studio, layering the parts painstakingly. You get that illusion of depth in the music. That was one of the overarching themes of the album in terms of how I approached it. I wanted to have that illusion of depth – that it was much bigger than me on my own in the studio with a MIDI keyboard. Tom's a genius, he really understood my sound and what I was trying to achieve. Generally when you work with people you tend to have a lot of back and forth. But he just sent back what he'd done and it sounded amazing to my ears."

George tells us that the original decision to bring more strings into his work started with an extraordinary live performance at the Musée d'Orsay in Paris. "[It was organised] via Cercle, they're an online electronic music brand. They approached me and said 'we've got an opportunity to film at the Musée d'Orsay in Paris and do you want to write a track for it?' I went to Paris and spent a day or two there, walking around and taking stuff in. I wanted to write something that felt quite grand. That's where the string element came in. It felt like I was taking the electronic music side of things and adding something that represented the museum's status and grandeur. That really kickstarted the album-writing process, I loved that idea of merging two worlds that generally don't go together."

With all of this focus on the musical information, we ask George at what point beats and rhythms become a concern. It transpires that they're usually a later addition, "My focus has been on melodies and the emotional content of those melodies. Making that all sound like I want it to before I get stuck in with drum programming. For me, drums serve a much more supporting role, and often I just want them to complement what's going on melodically."

It's interesting to hear this, seeing as George's way into music production was via his early forays into jazz drumming, but he explains to us that, "In jazz, a lot of the rhythms mimick what the melody and music is doing, so you'll have little ghost notes on the snare that hit when the melody hits. Generally speaking I build the drums around the melodies so I sort of fill out the gaps where the melody isn't doing its thing."

Catching the wave

For most of the making of *Tides*, George remained in-the-box, but he's keen to mention some hardware beauties, sitting defiantly in his studio. "I've got a Dave Smith Prophet 08 and a Nord Lead and various other hardware tools. In reality though, the thing that's most beneficial for me is to get my ideas out really quickly and instantly, and I find that much easier to achieve

Using white noise to make humanised hi-hats

Here's Catching Flies' technique for using white noise and tremolo automation to make ever-evolving hi-hats and percussion

1 "Find a loop of some white noise. Logic's in-built 'Test Oscillator' is good for this. It works better with a sound that is a constant rather than anything that is sporadic."

2 "Put a tremolo plugin on it. In this case I've used Logic's in-built Tremolo plugin. You can then adjust the Rate, Depth and Smoothing settings."

3 "For extra movement, you can automate any of these parameters, so the loop constantly evolves and changes. This works really well with the Smoothing function. The Depth function is good for rising effects into drops, for example."

George's work in the grandiose setting of Musée D'Orsay inspired him to explore string instrumentation

Photo: Maxine Chermat

with plugins. By the time you've patched the [hardware] synth, found the right cable, turned it on and tuned it – you've lost the idea."

George refers to an idea he recalls Brian Eno talking about, which likens the process to surfing: "His analogy was basically that you sit on the water on a surfboard for ages, waiting for a wave. Then that wave comes, and you have to do everything in your power to ride that wave for as long as possible for it all to fall out. You need to create an environment where you're able to do that and it becomes easier. In terms of my process, if I'm half-way through an idea and I need to find a cable to plug my synth in and patch the MIDI up, then I lose the flow."

Despite being a computer musician through-and-through, George often feels the need to add a touch of reality to his sonics, "What I find myself doing a lot is spending time trying to make it sound like it's not from the computer. Whether that's layering it with foley, or pitch-shifting it dramatically to make it sound old and crusty. Giving it a bit more life. I find that when sound travels from out of the computer into something else and then back in again. A lot of the time, I run the music out, through a guitar pedal, then back in through the computer. Through that process, you get more interesting results I find."

In the Catching Flies workflow, the speed factor is crucial – and inspiration can strike at any point in the day. "I get inspiration all the time. I've got into the habit – especially with this record – of recording ideas as they come. I might be walking down the street and I'll have an idea for a melody. I'll do a recording into my phone as a voice note. I'll come back to it at a later date.

> "I'll go for a swim and I'll suddenly have a flash of inspiration and think 'Ah, that's what I need to do!'"

I've got hundreds of melody ideas that are sitting there. When I'm living my life and not in the studio, I solve problems. Sometimes I'll be halfway through a track and hit a brick wall and won't know where to go next. So I'll go for a swim and I'll suddenly have a flash. I'll think 'Ah, that's what I need to do!'. I'll come back and it'll all make perfect sense. But when you're in front of a screen and endlessly trying, it sometimes doesn't happen. I'd say all the best ideas I've had are not ideas that have come from sitting down and thinking, 'I want to write this type of thing'. It's been from not having a planned studio day and messing around with something for half an hour, with no pressure or intention."

While other artists might pore over their streaming stats and sales analytically, trying to determine the 'perfect' formula to guarantee success, for George, music leads the way. "I'm quite old-school in that sense. I'm a bit of a luddite when it comes to social media. I don't find it beneficial to me in any way – in terms of productivity and otherwise. I'm always being told that I need to do more on it. I prefer to spend my time working on the music itself. For me, it's much more important to focus on the reason I do this in the first place, which is the music. Then, anything that follows is a bonus. I'd make music if nobody was listening. It's something I have to do." **cm**

Tides is available now. For more info on Catching Flies upcoming live dates and releases, head to catchingflies.com

HEAR MORE

Catching Flies, *Satisfied*
bit.ly/cf_satisf

Catching Flies, *Tides*
bit.ly/cf_tides

catchingflies.com

soundcloud.com/catchingfliesmusic

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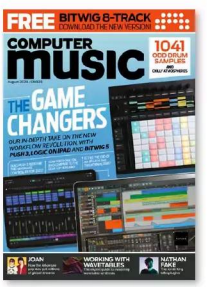

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cm/reviews

The latest computer music gear tested and rated!

68__FREQTUBE FT-1

Warm your cockles with this tube-tastic analogue-digital kit

72__OEKSOUND BLOOM

The makers of Soothe work more of their adaptive EQ magic

Our promise

We bring you honest, unbiased appraisals of the latest computer music products. Our experts apply the same stringent testing methods to all gear, no matter how much hype or expectation surrounds it.

What the ratings mean

1-4__A seriously flawed product that should be avoided

5___This product's problems outweigh its merits

6___A decent product that's only held back by a few flaws

7___Solid. Well worth considering

8___Very good. A well-conceived and executed product

9___Excellent. First-rate and among the best you can buy

10__Exceptional. It just doesn't get any better than this!

74 Minimal Audio Current

76 Arturia V Collection X

78 Sugar Bytes Effectrix 2

80 Cherry Audio SEM

82 GForce Software Axxess

84 Antares Vocal Reverb

86 Steinberg Nuendo 13

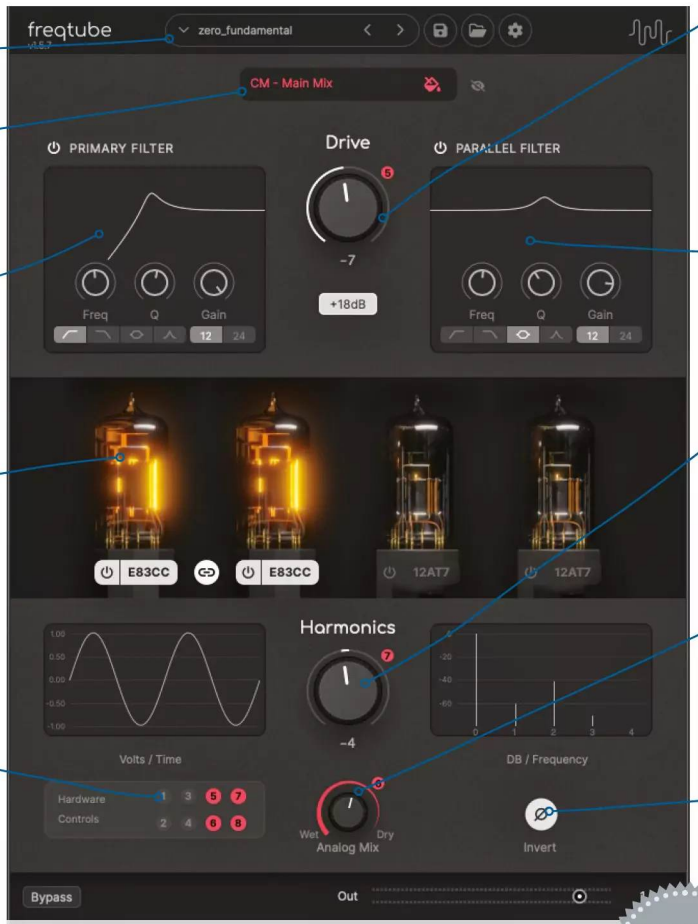
88 Soundware

Awarded to products that challenge existing ideas and do something entirely new

A product has to really impress us with its functionality and features to win this one

If the product exceeds expectations for its price, it will receive this gong

In the opinion of the Editor, the best product reviewed in the magazine this month



PRESETS
Armed with a basic set of recommended presets to get you going

TRACK
Identification of the track being effected, you can also select a colour

FILTER
The Primary Filter allows flexibility and control

VALVES
It's all about the valves, which can be selected and paired from here

HARDWARE POTS
Assign and select each pot, according to its hardware designation

DRIVE
Indicate the amount of saturation required, by adjusting the pot

PARALLEL FILTER
A secondary filter, complementing the primary filter

HARMONIC
Subtle adjustment to the harmonic content can really heighten your mix elements

MIX
Adjust the amount of colouration/saturation, through the wet-dry mix pot

INVERT
Invert the phase of the Parallel path, if required

COMPUTER MUSIC PERFORMANCE Award

Freqport
Freqtube FT-1

£899 PC MAC

Fancy adding some analogue impurity to your DAW? For **Roland Schmidt** it's high time to turn on, plug-in and freq out...

> Since digital became the norm for music production, there has been a persistent cry from analogue die-hards and audiophiles that digital just doesn't cut the sonic mustard, with one adjective being mentioned more than any other: warmth. But what *is* warmth, and why is it such a big deal to your reputation if your recording isn't deemed to have it?

Ask ten different engineers, and you'll get ten different answers, because it's not an easy thing to quantify. But one thing is for sure: analogue signal paths add impurity and a level of distortion to the signal, which our brains broadly perceive as a nice 'fuzziness' around the sound we're focussing on. In plugin terms, it's become the pursuit of many audio software companies to effectively mimic that effect, and there have been some incredible successes in this realm in recent years, in the guise of both synth-based plugins and audio effects.

But what, you may ask, if you could take this concept to the next level and actually integrate analogue into the signal path, in such a discrete way that it would be as simple as using a regular

The valves radiate beautifully from within the casework, emitting that signature orangey glow

plugin and piping your signal through analogue circuitry? Well that's what the clever folks at Freqport have managed to accomplish, through their recently produced box-of-analogue-tricks called the Freqtube FT-1.

Getting warmer

There are two elements involved with the FT-1; firstly, there is a small metal desktop box (which can also be rack-mounted with a kit that's available separately) which measures 205 x 130 x 50mm in size, and houses four vacuum tubes, aka valves. These are the sort of thing that you will see in vintage hi-fi amplifiers and valve-based guitar amps. As any valve user will tell you, they get perishingly hot, so the casing acts as a protective holding space, sparing inadvertent accidents.

The casing is beautifully engineered, featuring a crisp colour display which presents information relating to eight pots, laid out below. This allows flexible real-time control, direct from the hardware, with guidance drawn from the display and computer screen, simultaneously.

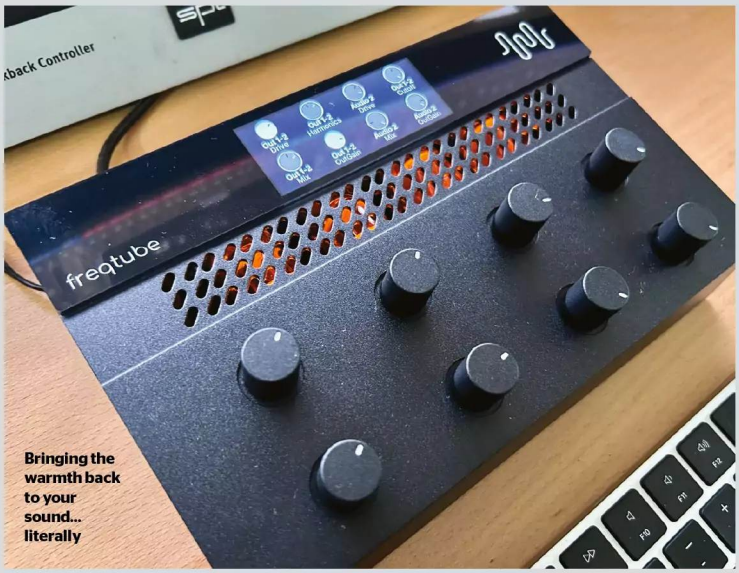
Around the back is a USB-C connection, allowing the supplied USB-C to USB-A cable to be plugged directly into your computer. We tested the FT-1 through a powered USB hub, with no adverse affects. There's also a DC connection point, for connecting the supplied 24w power supply, which is required to equip the valves with enough juice to perform. The on/off switch can also be found around the back, but it's admittedly a little difficult to access, due to its small size and location.

Inside the casework there are four valves, which are paired, although they can also be singularly split via the software to behave in a mono capacity. The valves contained within are two E83CC tubes, which are well known in amplifier circles for their low noise and superior definition, coupled with two 12AT7 valves, which are excellent for enhancing frequency content, without the early onset of distortion.

Plugging in

In order to access the valves/tubes, you'll need to install the second element, the accompanying software; the Freqtube Hub software scans immediately for firmware updates, while the plugin element adopts the usual formats of AU, VST3 and AAX. Once installed, loading the plugin into your DAW magically brings the box-o-valves to life. The valves radiate beautifully from within the casework, emitting that signature orangey glow, and should you get cold in the depths of winter, you can use the heat that's vented from the front panel as a toasty handwarmer.

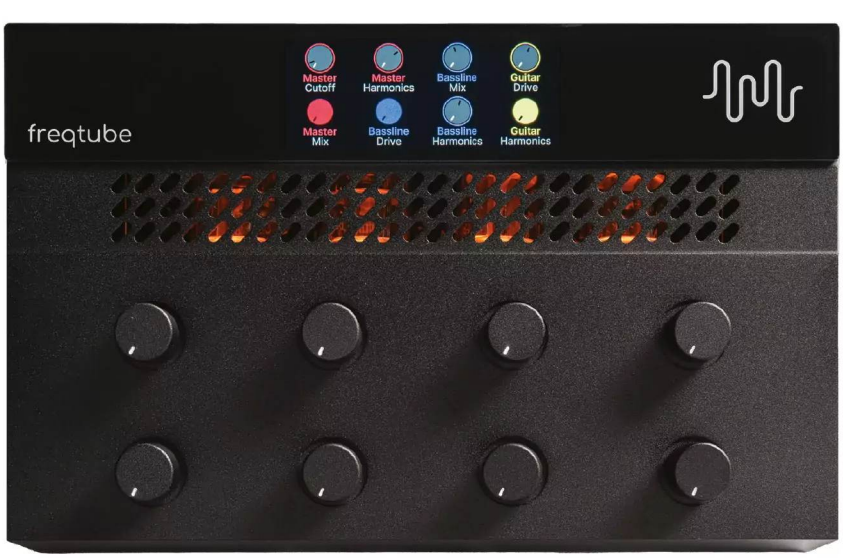
Turning our attention to the plugin part of the equation, the effects are very much a sum of



Bringing the warmth back to your sound... literally

Hi-tech spec, old-school character

Once you place the FT-1 box on your desk, and it starts to glow, it's difficult not to be sold on the idea of funnelling your digital audio stream through analogue technology. In order for this to happen, you're in effect performing a necessary conversion from digital to analogue, and back again. Under many circumstances, additional conversion is what you try to avoid, but thankfully the hardware is fitted with excellent 32-bit DACs, which shouldn't degrade the signal in any way. You can also increase your sample rate up to a full 192kHz, if you want to operate at the highest audio resolution currently available in today's world of DAWs. Because of the FT-1's digital existence, there is no capacity for analogue input. That would have undoubtedly added further cost to an already expensive device, but it also might have sweetened the deal by allowing another level of use. The character provided by the FT-1's level of saturation can be used in many settings, from the obvious distortion applied to guitars, through to synths, keyboards and especially the master mix. But it's also easy to get carried away while applying saturation, so it's important to listen and question whether it's providing the coloration you want. Your ears will also inform far more than any numbers that you might see in a DAW window.



The display and pots mirror the GUI through a lovely sense of immersion

Side by side, the Freqtube Hub software and a small desktop case housing four vacuum tubes

parts. In the upper part of the plugin window, there is a Primary and Parallel filter. Both can be switched between active/de-active status, while providing high and low filtering, bell-curve and band-pass filtering. While these are described as filters, they have obvious connections with EQing, and are aurally excited by the increase of the central Drive pot.

We first of all started to experiment with the plugin by playing a pre-mixed, but unmastered, track through the plugin and unit. With both of the filters switched off, we began by increasing the drive pot. The immediate saturation was very apparent, and while distortion levels quickly turned obscene, backing off the drive pot subsequently resulted in a really rather pleasant degree of colouration.

This basic experiment underlies the flexible nature of the plugin and hardware; it's absolutely ideal as a back-end mastering tool, where that 'warmth' quotient can be applied to varying degrees, depending on the result you wish to obtain. However, we were immediately enthused by the possibility of placing the filters under automated control, to create heavily saturated synth lines.

Tubular swells

This also brings us to another area of flexibility, where the tubes may be paired with different instances of the plugin, so you can quite happily pair one set of tubes on the master bus, while using the remaining two tubes as mono signal paths. On the flipside though, it does also highlight a major shortcoming, which is that while you can use multiple instances of the plugin, you can only address the valves one at a time. Once you've deployed and used a valve, it can only be used in this instance, meaning that at best you'll only be able to use four instances

in mono, or two instances in stereo, or a combination of the two.

Towards the bottom of the plugin window, there is a form of harmonic control, which allows the highlighting and exciting of the incoming audio. In extreme form, this can be rather destructive to a mix, with frequencies being obscured. When used subtly, it can add a degree of sparkle to a mix. This can, in turn, be applied sparingly, using the wet/dry mix control, located toward the bottom of the plugin window.

One of the niceties accompanying the FT-1's way of working is the ability to align the eight hardware pots with the software. It's obviously no hardship to use the mouse, but having capacity to tweak different elements of saturation simultaneously is a very nice way to work. The hardware display mirrors your pot's control settings, using numbers to indicate which of the pots applies to which control on the plugin GUI.

You'd also be forgiven for thinking that latency might be an issue. It certainly wasn't something that we were aware of during our testing. The signal clearly passes through the valves at some speed, and given that the processing is taking place within the hardware, there was no CPU pull on the system.

Full-tube ahead!

In our brief time with the Freqtube FT-1, we were definitely impressed. Sonically, it provides an enormous amount of colour, so much so that we loved it in various scenarios. Used subtly, its warming qualities coloured and compressed our mixes by osmosis, resulting in some truly appealing audio examples. Pushing to an extreme, it had our 101/303 synth lines ripping and distorting to such a degree, that it made us want to liberally apply it to a lot more than we had capacity for.

> It had our 101/303 synth lines ripping and distorting so hard, we wanted to liberally apply it everywhere

It's perhaps this final point that we need to ponder most of all though; the Freqtube FT-1 is undeniably a premium product, with an audio character which is undeniably a cut above the rest, but given its price tag, it's considerably more expensive than many other fine plugins that will yield similar results. Moreover, you'll also be able to use continual instances of these, where the FT-1 will run out of tube capacity at a certain point in time. The trade-off of this, however is that you won't get a beautiful box for your desk, that warms your room, your mix, and your soul, and that could be worth the expenditure in itself. **cm**

Web freqport.com

Alternatively

Soundtoys Decapitator
$199 (or via the Soundtoys 5 suite)
Something of a standard for many saturation and distortion situations. It's got something for every style

SSL Native X-Saturator
£95.99 (ex VAT)
A deceptively simple saturation plugin which immediately warms and colours a signal

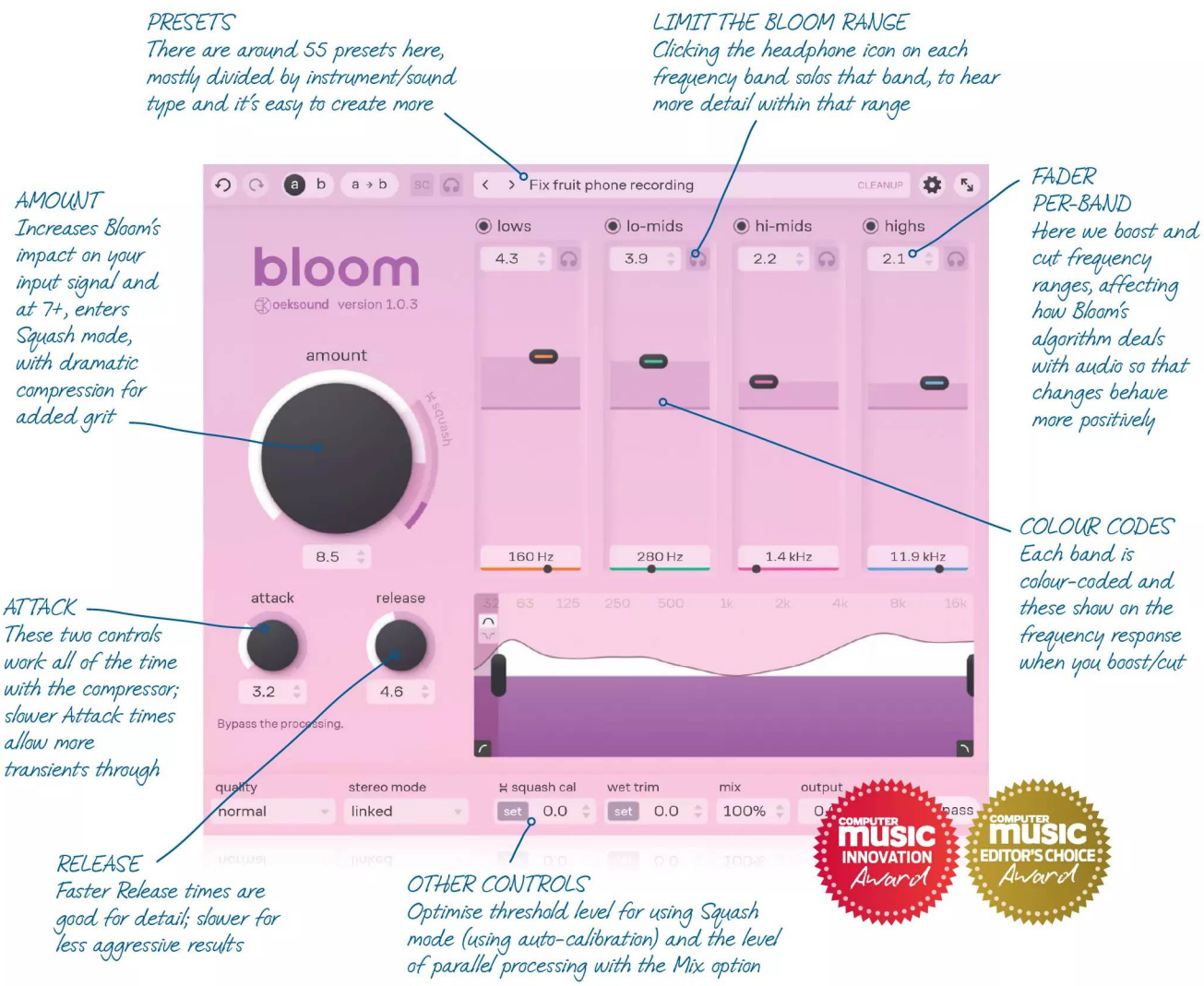
Verdict

For
- Provides beautiful degrees of colouration (if used sparingly!)
- Gives an audio signal a huge distorted kicking (if driven to destruction!)
- The hardware is skilfully engineered
- Uniquely seamless integration between analogue and digital technologies
- If you like 'warmth', you'll love this

Against
- It's expensive for a plugin, but the hardware is great
- Valves will give out eventually
- The power button is fiddly to locate

As a technical achievement, this is an absolute triumph, with a depth of colouration that's flexible in many settings

9/10



Oeksound Bloom £169

PC MAC

Bloom is an adaptive EQ that will make your music sound better. **Andy Jones** says it's harder to explain how it actually works than to just use it

> Oeksound has become the developer to watch. It has big support for its small number of plugins, with their often dynamic and adaptive natures processing your signals as you go. Titles like Spiff control transients while the multi-award winner Soothe2 tackles resonance. The all-new Bloom on test here is also adaptive. It's an EQ at heart, but one capable of increasing the good stuff while not increasing the bad.

Allow to Bloom

Bloom is what Oeksound calls 'an adaptive tone shaper' and the company has spent six years developing it, refining its DSP to increase warmth and presence, but in a way that doesn't enhance some of the bad side effects that can come with this. Bloom essentially analyses your signal and improves it to give it these qualities, all while keeping, say, sibilance in a vocal or muddiness at the low end in check.

We go into how Bloom does its thing in the box, on the next page, although the actual maths is murky. But we're willing to bet that machine learning or AI were involved somewhere along the line. It's probably easier to say what Bloom isn't, as opposed to what it is.

And while we've said there's an EQ at its heart – and you can use it like one – it can also act like a compressor or saturator. But really, as Oeksound admits, "it falls under none of these categories." What we have, then, is one of those plugins where you don't ask what it is, so much as what it can do, and here's where it starts to blossom.

Bloom can be used on single tracks, as a bus processor or on entire mixes and the idea is that however you use it, you should expect more character, clarity and general lushness as you go. Effectively, then, you are having your music production cake and eating it, being able to

Though we're still not entirely sure of the maths behind adaptive EQ, we know we need one in our lives

push higher frequencies and not get harshness; lows and not get muddiness. There's also plenty to tweak on the UI to increase, alter or decrease Bloom's processing, and we'll cover more of that in the box because it's time to let it Bloom.

Blooming great?

For drums we found Bloom best used first on the Factory Default setting and gently dialling in more of the Amount dial (up to around 7.5) to hear the plugin add weight and sparkle. The presets for drums are more creative, offering some filtered and smashed results, but still solid. The Hard Hitting Beat Parallel preset highlights a great parallel processing option.

On bass sequences Bloom sounds exceptional, keeping clarity even when pushing the lows. The Motown Bass preset was particularly interesting, and didn't give us the narrow results we were expecting; instead a forward and clearly defined tone.

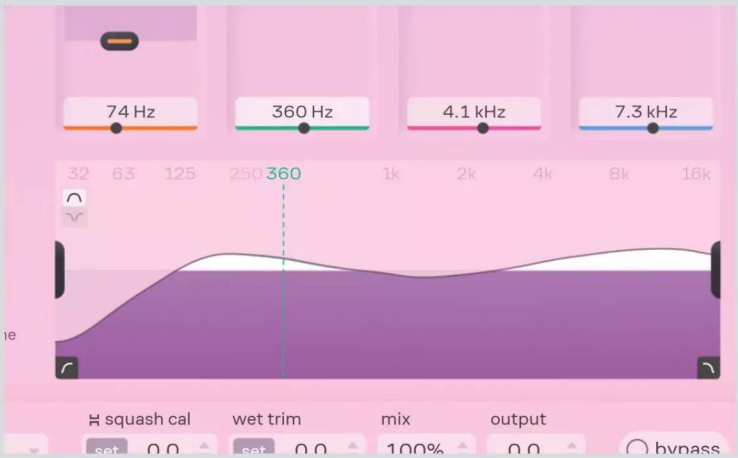
One thing you might want to watch out for is Bloom removing resonating frequencies that you want to keep. On a more filtered acid bassline it lost some of these that we were trying to retain. Of course it is easy to dial it back, but it is a lesson not to rely on your ears.

We then run some vocals through Bloom, and the preset names sum up how it excels here, with Wider Backing Vocals and Warm & Clear Pop Vocal telling you everything you need to know. However that "no added sibilance" when you push the highs is also a big takeaway.

Finally, the Mix presets are the most exciting. Some, like Smile and EDM, give you a bit too much weight but dial both back and they sound exceptional, so yes, Bloom really can make you sound like a seasoned mastering engineer.

So what's the bottom line? The "don't use clichés" voice in our head is screaming for us not to say that "Bloom is the plugin you didn't realise you needed", but with so much sonic evidence in our tests to support that statement, it's hard not to conclude with it. We started this review by trying to explain what an adaptive EQ is – and mostly just explained what it isn't – and even though we're still not entirely sure of the maths behind it, we definitely know we need one in our lives. Blooming marvellous. **cm**

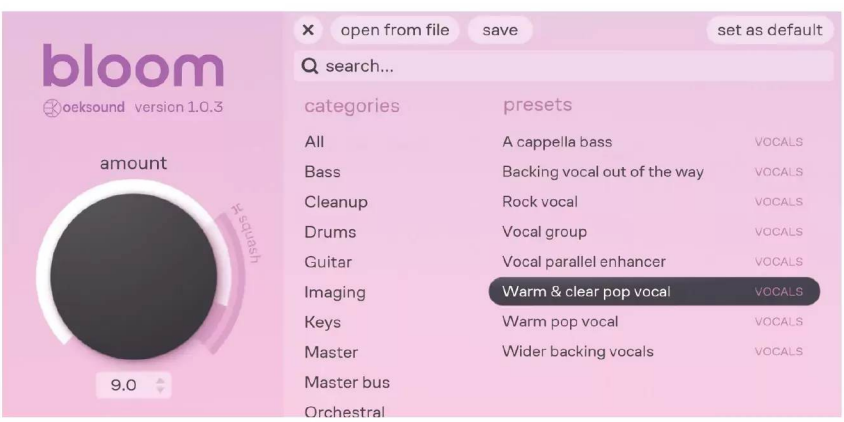
Web oeksound.com



The main display shows Bloom boosting (white) certain frequencies and scooping others (in purple), both above and below a central axis that shows the relative frequency response of your original audio

How Bloom actually works...

Even on the default preset, Bloom analyses your audio, adaptively scooping and boosting particular frequency ranges, and attempting to amplify the good and reduce the not so good. And you can see these processes clearly as white additions and purple subtractions on its display. You can, should you wish, limit its operation to certain frequency bands by grabbing handles on the sides of the UI to turn Bloom's operation off at the high and low end. Similarly, you can select filter icons to roll off at these ends, the ranges of which are again dictated by the handles. Bloom has plenty of other options to tweak existing presets and create your own. The main Amount dial is where you can simply increase the plugin's effect until Squash mode compression kicks in. The four frequency bands offer extra boosts and cuts in their respective ranges but this is no ordinary EQ, as when you do this, they're also guiding the algorithm so the cuts and trims always sound clean.



There are 50+ presets included in folder types; we had to manually load some of ours in from the Oeksound site

Alternatively

Wavesfactory Equalizer
£85
Similar concept but concentrates on getting the audio back to a more natural source sound

Soundtheory Gullfoss
£160
Another auto EQ that simply makes your tracks sound better, albeit with a different process and result

Verdict

For Does genuinely sound good on pretty much everything you throw at it
Use it as an EQ or go that much deeper
With more controls it turns into a creative FX unit

Against A little pricey
Don't push it too much on some sounds

Bloom is yet another plugin that will help lift your sound in that instant, 'no questions asked' kind of way. Exceptional stuff.

9/10

EFFECTS
Click here to bring up the fully featured effects area, shown in the grab at the bottom of the page

MAIN ENGINES
You get two wavetable, one granular, one sub and sampler engine at Current's core

FM/AM
Yet more modulation here, to apply to the five main engines

STREAM
And click here to open up the cloud to access extra presets, wavetables and sampled sounds

FILTERS
Two multimode filters offer plenty of sound-shaping flexibility (50+ modes) and can be used in series or parallel

MODULATION SLOTS
You get 10 in total, using a simple drag-and-drop system for modulation

KEYBOARD ARP AND CHORD
Open up the virtual keyboard and you get arp and chord options, with extras for auto-composition

EXTRA KEYBOARD MODULATION
These six extra slots are specifically for keyboard modulation options like aftertouch and velocity

COMPUTER MUSIC INNOVATION Award

Minimal Audio Current

$199 or $10-15/month

PC MAC

Deftly side-stepping the subscription saga, **Andy Jones** has spent some quality time with Minimal Audio's dexterous flagship. Here's his findings...

> Minimal Audio's Current combines a powerful synth with a cloud-based ecosphere. You can upload samples, presets and wavetables into it from a constantly updated cloud via its Stream tab, and you also get access to Minimal Audio's excellent roster of effects to help you shape the tones you already own.

Whether this is a future model for all-in-one hub-type synths is to be decided, but it's fair to say that the model that Minimal Audio originally intended – a subscription-only one – was not met with warm approval by the synth community. So, now you can buy Current outright for the not-inconsiderable $199 (which grants you access to the All Access cloud for a year) or you can still subscribe (see box right).

Current flavour

Current is, at heart, a hugely powerful synth, before you even get to the subscription extras. You get two wavetable engines, a granular oscillator, plus an additive sub oscillator and sampler at its core, and a couple of multimode filters that can be run in series or parallel.

The modulation section is particularly powerful and easy to use. You get a standard amp envelope but then a further nine slots to play with. Each can be selected as an envelope, LFO, curve or follower modulator, plus you also get a set of six keyboard modulators to the right of these. Modulation is simplicity in itself; simply drag the circle from the modulation slot over to any available purple circle next to another destination, and modulation will take place from there.

With the virtual keyboard enabled at the bottom, using the bottom left on/off button you also get arpeggiator and chord generation options which are both fully featured, and each

As good as the modulation area is, it's the effects section that wins the deal and is a highlight of Current

comes with a great set of presets to quickly get you going. You can also lock these to the key of your project with a dial on the bottom right.

Ever-expanding effects

As good as the modulation area is, it's the effects section that wins the deal. You get nine slots and eight effects to choose from, but these are not just bundled effects that you'll find in many synths, but fully-formed MA effects that have won awards by themselves. These include the Rift distortion/multi-effect, Swarm reverb, Cluster Delay and Morph EQ. Minimal Audio says that further effects (including the recently released Flex Chorus) will be added as and when they are ready. These effects are a highlight of Current, so much so that we'd have loved the option to lock an effects setup that you create and load wavetables/presets into it, rather than a new preset bringing in its own effects in.

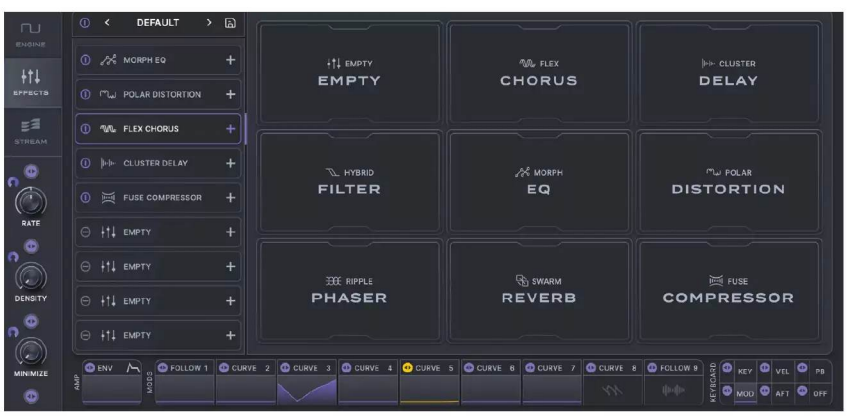
The next tab is Stream, and where you access the cloud of extra content which is free for a≈year on a perpetual license, so the temptation would be to fill your boots in that first 12 months. You get three main tabs of content to search through (Presets, Wavetables and Sounds) and each has a great search system via six main categories and then sub categories.

Audition each one and once you're happy, load in a Wavetable into Osc A or B, a sound into the Granular synth or sampler, or preset into a preset folder. It's incredibly easy to do - which you might expect given that this will eventually be paid-for content once your year is up.

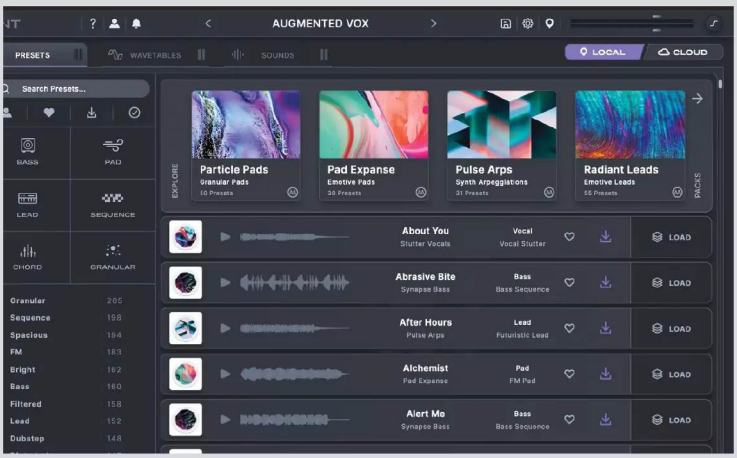
Current fun

All of the fuss about perpetual licences and subscriptions has detracted attention away from how powerful a synth Current is. The engines, modulation and effects alone make it a great sound design tool, and while the existing sounds seem to be geared more for the masses, there's plenty to get your teeth into if a more experimental vibe is required. That's where the superb effects enter their own. When it comes down to it, Current is a magnificent synth and worth the large outlay if you really make the most of that initial year of All Access content. **cm**

Web minimal.audio



The effects rack in Current is a highlight and also something Minimal Audio will be adding to with new titles



You get a year's free All Access subscription if you buy a perpetual license to Current, or else it's between $10-15/month. So it may be worth trying before you buy the synth

Subscription or perpetual licence?

If you go down the perpetual licence route, you get Current plus its integrated effects rack. Current has more than 340 presets, 180+ wavetables and over 160 sounds. The year's All Access that is thrown in offers as many extras as you wish for from the current Current cloud; that's sounds, wavetables and presets. If you opt for a $15/month subscription, you get Current plus the All Access account and all of the effects to use as individual plugins. This is actually a better deal than that might sound, as Minimal Audio's effects are all excellent - in fact the company made its name on its exceptionally creative plugins before branching into the synth world with Current. Finally on the subscription model is a yearly subscription. This gives you the All Access subscription but only costs $10/month (as a one-off payment of $120) and also gets you a $60 store credit bonus... presumably to buy other MA plugins, since the other content is free under the subscription.

Alternatively

Output Arcade
£12.99-£25.99/month
A very different beast but an instrument/sampler also with an expanding library of content

Kilohearts Phase Plant
£158
Another different concept, but Phase Plant and Current certainly have a similar feel and vibe

Verdict

For Very powerful synth engines
Top-notch effects rack
Practical and flexible modulation
Easy to use

Against A little too 'EDM' on occasion

Current is powerful, flexible and expandable. It's expensive for a one-off but that year's free All Access pass might just get you your money back and some

9/10

Arturia PC MAC
V Collection X €499

Arturia's mighty V Collection reaches generation X, but now its focus is not just on classic keyboards but new ones too. **Andy Jones** Xplains

> One of the 'safe bets' in production software is surely Arturia's V Collection. It's always offered a lot of quality keyboard emulations for its price, and it's regularly updated; great value when you consider its scale. However, it's also a victim of its own success, with so many classic emulations included that there's little more worth emulating. So how can future updates be as good? With the last (v9), Arturia got around the problem by introducing its Augmented range of instruments on top of a few vintage additions. Augmented Strings and Voices were the first two entries, and we suspected that this would be a future path for V Collection to take. V Collection X proves we were on the money.

Add an X to Collection

There are three new Augmented titles in V Collection X: Brass, Grand Piano and Woodwind, but that's not to say that version X doesn't have vintage additions too. These come in the form of CP-70 V, Arturia's emulation of the Yamaha CP-70 electric piano and Acid, very much a TB-303 bass squealer, and more as we shall see.

Completing the addition of six instruments in total is the software version of Arturia's excellent hardware synth MiniFreak. MiniFreak V is an exacting replica of that digital synth and its inclusion points to another possible future for V Collection. (We're wondering if we'll get Pigments in a future update.)

Starting with Acid, we have an instrument that can very much deliver the classic acid sounds you know and love, but rather like the Augmented range (which we focus on in the box right), there's more too it than that. There are

You now get close to 40 instruments in total which is quite incredible

loads of really filthy distorted sounds that go even further than the original's pretty darn dirty capabilities. There are also more up-to-date dance leads and even a pad, so it delivers a lot more than just Acid.

Much more restrained is CP-70 V which concentrates on great electric piano sounds with only a couple that stray too far.

Our 'highlight of V Collection X' award probably goes to MiniFreak V though. This instrument has been around to buy separately for a while and you get it with the hardware synth, for which it makes a great partner – and arguably even opens up the machine for even greater tweakage. Sound-wise you get a hell of a lot, with more than 20 engines supplying everything from classic analogue synthesis to dirty or shimmering digital. It can be as off-the-wall as you like (it's the older sibling of MicroFreak, after all) but absolutely beautiful too, a real gem of a synth to own in either hard or soft forms.

As if these and the Augmented additions aren't enough, Arturia has also rebuilt Mini V and Wurli V, with Mini in particular, looking (and sounding) better than ever.

Is V Collection still a winner?

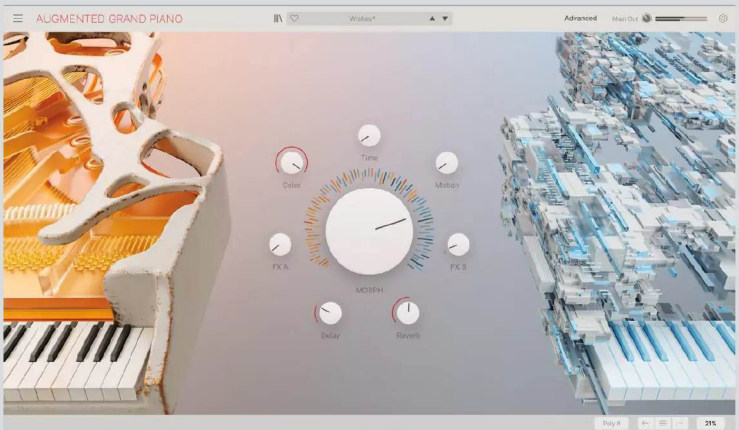
Arturia has done well to keep the V Collection flag flying with version X. You now get close to 40 instruments in total which is quite incredible, and way more than any other bundle delivers. And we've not even mentioned the sound banks that come with the collection – there are now 17 thanks to three more additions in version X.

The Augmented range is solid and surprisingly varied in tone. This gives a fresher edge to the collection, acting as the modern sheen to most of the collection's dusty analogue warmth. Acid does a very good job of recreating that well known sound and a lot more. But it's the varied digital tones that MiniFreak brings that are (perhaps oddly) V Collection's most exciting update. We all love the original hardware and its tones are very welcome here.

So it's a good update, and whichever way you look at V Collection, you're still only paying around £15 per instrument which is a steal for some of the best emulations out there. **cm**

Web arturia.com

Mini V gets updated to v4 in V Collection X, along with a new UI that gives it much more 3D appeal



The main central dial in Augmented Grand Piano morphs between sounds, while others introduce effects like delay and reverb. Motion adds vibrato effects while Color brings some nice saturation

The reality of the Augmented instruments

The Augmented Series of instruments in V Collection does pretty much what you'd expect, given the name – each focuses on an instrument type and augments it. The new Grand Piano instrument, for example, has some beautiful grand piano sounds but is, like all the range, really all about morphing them with other sounds (with the main dial), introducing movement with a kind of vibrato effect, or adding other effects like delays and reverbs. It's easy, hands-on synthesis really. We weren't looking forward to the Brass one, not being huge fans of the sound, but of course, it's a lot more than brass and there are some strangely compelling presets in there. It's very easy to take them beyond what you start with and call them your own. Woodwind completes the set and is equally expandable – woodwind if you want it, but way more too. Twhese are great additions to the bundle and well worth exploring once you've done your keyboard museum tour.

Alternatively

Korg Collection 4
$399
Korg's Collection has 13 absolute classics in it and makes a great partner to V Collection

Roland Cloud
from $2.99/mo
The Cloud continues to thicken with vintage Roland greats – many of which aren't in V Collection

Verdict

For V Collection still rocks
Love the MiniFreak V addition
Acid squeals well if that's your thing
The Augmented additions are very solid

Against If you want the 'vintage' of V Collection you might be disappointed with just two additions

V Collection is still an excellent bundle of instruments and with X, Arturia has maintained its record of great updates

9/10

Sugar Bytes
Effectrix 2

€129 PC MAC

16 years after the release of the original, Sugar Bytes has finally updated this multi-effect sequencer but, asks **Andy Jones**, is v2 worth the wait?

> We've seen some very old software get updated recently, but this might well be the longest wait between versions that we've seen; the original Effectrix came out some 15 years ago. The concept was very innovative at the time: a bank of 14 effects within their own sequencer environment which you could sync to your DAW for glitchy, experimental fun. But is there still room for it in 2024?

On the face of it, version 2 hasn't really moved on that much over those 14 years, but dig a little deeper and you'll see some bigger changes. The UI for the 32-step sequencer has been redesigned but is still simple to use. You simply choose which effect you want and then draw and drag where you want it to take place. You can divide the steps in the grid from half note to 32nd with triplet options new to v2. You can also now change the order of the effects, something we asked for in version one, so that was worth the wait.

One of the best features from version 1 stays, whereby you can store a complete 32-step pattern on a MIDI note of a virtual keyboard on-screen, so call up one of up to 12 different patterns by pressing each key, or even recording them as a sequence – you're effectively sequencing *within* a sequence. This is obviously a significant win when it comes to live performances too.

Moving over to the effects section, there are still, as ever, 14 options running from top to bottom, but Sugar Bytes says that these have all been redesigned. You still, however, get the same types (just presumably better quality) so there are two loopers, delay, reverb, level, grain,

It might not be as innovative as it would have been 14 years ago, but there's a lot to love here

ring, vinyl, spectrum, tonaliser, crush, phaser, filter and modulation.

Parameter action

Draw a note on any of these effects and a set of parameters appears on the bottom of the UI, together with presets for each effect to choose from. The number of parameters you get for each effect is now enough to really get in and make some big tweaks, so it's a part of Effectrix 2 that is well worth exploring.

For the Looper, for example, as well as loading in sequenced pitch pattern presets (shown below), you can adjust the swing, pan, decay and more. With other effects like the Phaser, there are options to change LFO amounts and rates, plus feedback.

The Filter effect is particularly full of options. There are an incredible 16 types to choose from (including four Moog-style ones) and then you can select hi, low or band-pass. You can also set the Filter to be more formant-like in its action and there are four controls to tweak vowel type sounds when you do.

The Delay effect has some great parameters worth exploring too, with both left and right channel options, each with eight delay times included. All in all, it's an incredibly neat system and very easy to draw in notes, tweak parameters, modulate – see box, right – and massively smash up your existing audio as well as having a great deal of of fun along the way.

Does it do the 'trix?

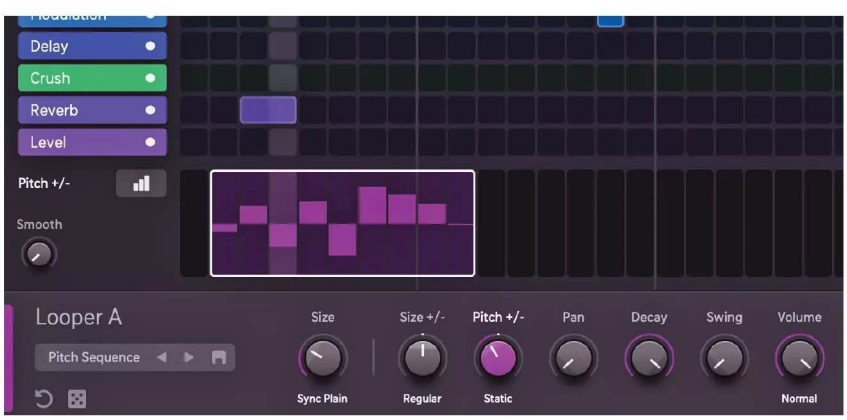
If you fell in love with the original Effectrix – and a lot of people did – there's a heap of improvements in version 2 that we, and many others, asked for and it's well worth the upgrade (although there's no option to do that at present). If you are new to the concept, we think it's well worth a go on the demo before buying. It might not be as innovative as it was 14 years ago, but there's a lot to love here. The modulation system is very easy to get to grips with and effective, the effects themselves sound incredibly varied and will liven up pretty much anything you put through them, and the whole package is a fun, addictive, creative and inspiring experience. **cm**

Web sugar-bytes.de

Click on the Modulation button (to the right of Cutoff beneath the effects) to get this drop-down menu of modulation styles. There's plenty to choose from and you can easily adjust amounts too

Modulation options

There is now a brilliant modulation setup built into Effectrix that makes all of those parameters that we discuss in the main text easy to modulate, so you can bring in even more dynamic movement to your already Effectrixed sound. You click on a part, and then the Modulation button that's beneath all 14 effects on the left. This opens a drop-down menu with various options including an adjustable step sequencer, various LFOs, envelopes and a random generator. The From To option lets you set both a start and end value so you get complete control over the timing and level of modulation. It's all very easy to use and sets up some fantastic movement. We particularly like the Step Sequencer option as you can assign that to anything to effectively sequence notes within your 32-part sequenced pattern. Then you can assign up to 12 of these patterns to your MIDI keyboard and sequence those for three levels of sequencing – probably more than enough for anyone!



Here we have the Pitch Sequence preset on the Looper, to give it a mini-sequence within a sequence

Alternatively

HY-Plugins HY-SeqCollection2
$55
Similar multi-effect sequencer with six modes but MIDI-only effects

Devious Machines Infiltrator 2
£99
Less of a sequencer, more of an absolutely massive multi-effect

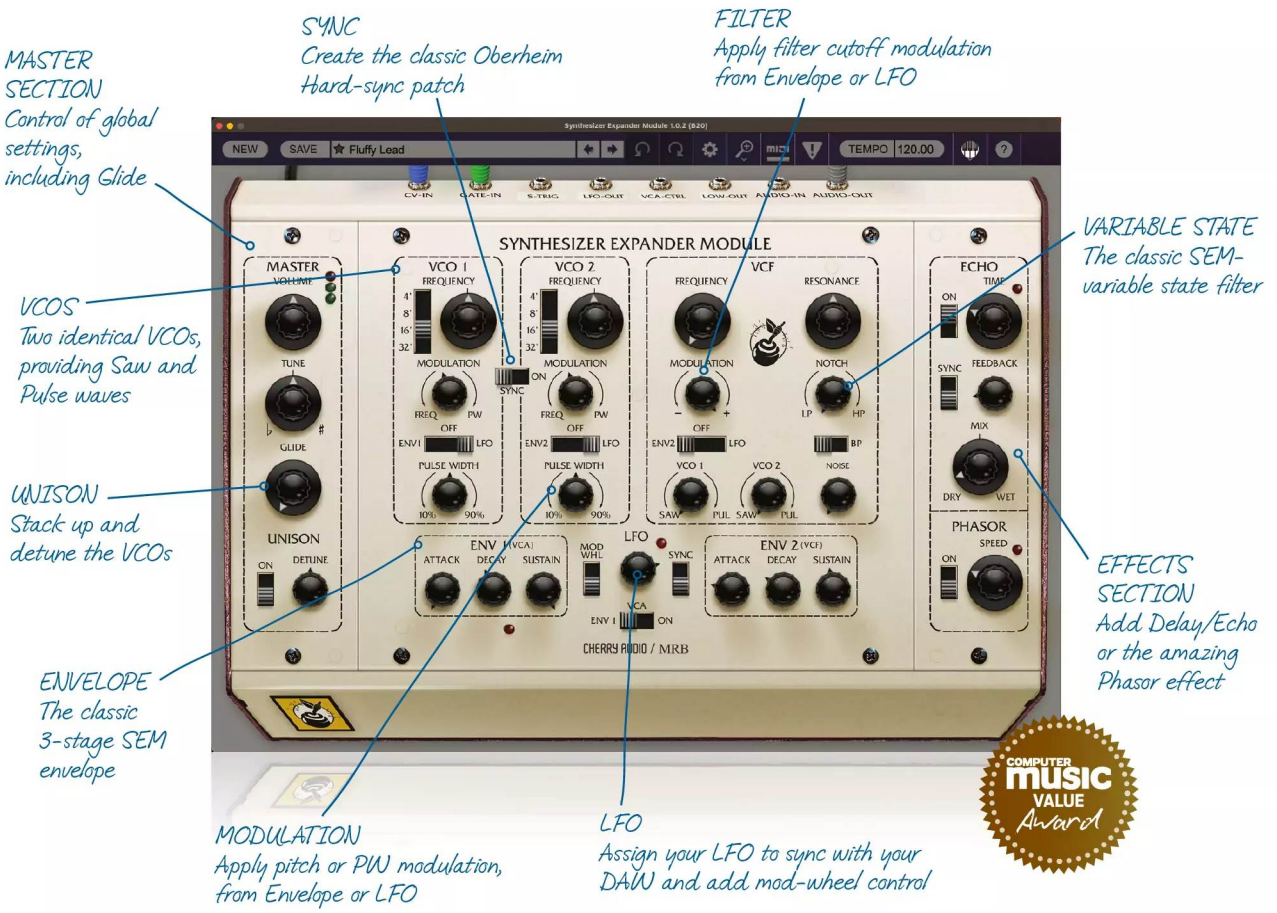
Verdict

For
- Lovely modulation system
- Great-sounding effects
- Will add massive drama to everything you throw at it
- We love the MIDI note pattern-saving option – superb for live performances

Against
- A lot of it was in v1 already
- Different modulations per effect would be a good addition

Effectrix 2 amazingly still has a place in production 15 years after v1. Version 2 is a solid update that's well worth exploring

8/10



Cherry Audio PC MAC

Synthesizer Expander Module (SEM) Free (!)

It's hard to resist another seminal classic from Cherry Audio, says **Roland Schmidt**, but at a bargain price of zero, are they selling themselves short?

> When Tom Oberheim launched his company in 1969, he probably didn't realise the influence his designs would have. His initial products were based around effects processing, followed swiftly by one of the first digital sequencers. But it was the appearance of the Synthesizer Expander Module (SEM) in 1974 that captured the imagination of musicians and≈synthesists, which continues to this day.

The one and OB

The SEM was (and is) a monophonic synth voice, replete with two oscillators, variable-state filter, envelopes and LFOs. It was designed to act as a voice-partner for the Oberheim DS-2 sequencer, before Tom had the idea of placing two, four and even eight SEMs in a keyboard construct, creating the 2-voice, 4-voice and 8-voice synthesisers. After several years in the production wilderness, SEMs were brought back to life, with a limited number of hand-built reissues being manufactured during the years after 2009. With the exorbitant cost of both the vintage and reissued models, the appeal of software has never been greater, especially at a zero price point.

Cherry Audio's reimagining of the SEM begins with its usual attention to detail, through hi-res graphics; it looks absolutely stunning. You can see the shadow of the casting holes on the fascia, with the outline of the stickers above the jack points on the rear, while the end-cheeks glisten as though they're catching the light in the room. It looks three-dimensional and we kept having to tell ourselves that it wasn't protruding from the screen. In a slight change from the company's norm, there is no Focus mode; this appears on other Cherry Audio products, as an elegant method of zooming in

The Cherry SEM would be a bargain even if it were to be placed around its usual competitive price points

on the GUI's panel, but with a generous resizable plugin window, it doesn't feel like it's required.

Sound battle

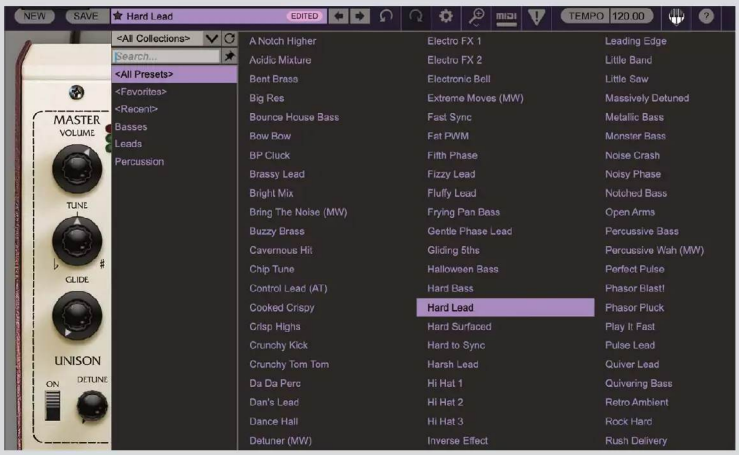
So with a big tick on the graphics front, how does it sound? Well, we thought we'd put it through its paces against a reissued Oberheim SEM from 2009, to see how it compared. The simple answer is, amazingly well. It's going to be very difficult for any software to compete with any aging analogue device, as the circuit degradation alone will likely add colour to the sound, but while the original SEM packed just slightly more punch and depth (and we're being hyper picky), the Cherry Audio model exhibits a production-ready status, with a sound which is incredibly authentic. This extends to the positioning of the potentiometers on the fascia, where the software even pulled off some remarkable mimicry.

What we overwhelmingly love about Cherry Audio's SEM, apart from the lack of price, is its unambiguous simplicity. It maintains the signal/modulation switching and odd quirks of the original, along with the classic variable-state filter, which sweeps from low to hi-pass modes, or can be placed in band-pass mode. The basic modulation of pitch and pulse-width remains, but it's the versatility and wispiness of the filter, that totally endears us. Place the filter through the onboard stereo Phasor, and it sounds utterly stunning, although you also have the option of onboard delay and a Unison mode with detune, should you be wanting to widen the oscillator texture upfront.

Modern tendencies

Let's be honest, you don't need to persuade synth-heads to download a freebie, although the Cherry SEM would be a bargain even if it were placed around its usual competitive price points. Placing this to one side, it sounds unbelievably good, even alongside hardware, and provides the added convenience of saving patches. Cherry Audio has supplied a handful of great presets to get you going, but as this is a quirky-but-simple mono-beast, which sounds totally Oberheim, you may well eventually find it difficult not to get twitchy with your own editing and automation. **cm**

Web cherryaudio.com



The itemised patch list of curated presets

SEM en masse

We can't go far enough in praising what Cherry Audio has produced here, even if it did have a price-tag. The SEM is undoubtedly a quirky synth, and one that is a product of the time of its original production. You have to select the oscillator's waveforms from within the filter section, before swinging back to the VCOs to dictate modulation amounts, but ultimately it's a complete synth voice and all the more wondrous for it. Spare a thought then, for anyone who might have owned a 4-voice or 8-voice, where multiple SEMs could combine, to create the most unwieldy synth architecture. All of those individual voices became a far cry from the Prophets and Jupiters that replaced them. However, if you fancy having a look at one in software, you can, thanks to Cherry Audio's Eight Voice plugin, which brings eight software SEMs to a desktop near you. Thankfully, the team has done the hard work; it'll stay in tune, and provide plenty of stable patches, unlike the original.

Apply any MIDI CC to an onboard function, for total control in a live environment

Alternatively

GForce Software Oberheim SEM
£50
GForce's take on the SEM is another high quality software iteration, with a host of additional functions

Arturia SEM V
$150
One of the first of the SEM software reincarnations: worthy, but feels overpriced in the current lineup

Verdict

For The graphics are so enticing and wonderful to work with
The stereo Phasor is amazingly creamy
It's got an incredible production-ready feel
Comprehensive MIDI mapping, for real-time and automated control
Against It's just a humble mono synth, but it does an awful lot for the price!

As a versatile and authentic software incarnation of an Oberheim classic, it wins hands down both visually and sonically. The fact that it's free makes it a no-brainer

10/10

PRESETS
There are 350 presets to choose from over nine categories, all accessed via a neat browser system (see below pic)

EFFECTS
Choose from three very high-quality effects to give your 1975 sounds some added sheen – these really do make the synth

X-MODIFIERS
Two extra modulation sources per parameter give you a huge amount of extra dynamic power

CHOOSE YOUR POLYPHONY
You can select Mono mode or up to six voices of polyphony, plus there's a Unison option for those big, fat sounds

VINTAGE KNOB
An increasingly 2020s feature, this make your synth sound more wobbly and old by detuning and destabilising

SMALL TAB, BIG IMPACT
Not important to many, but this allows full resizing – great if you use a tiny 13-inch laptop!

SEQUENCER/ARPEGGIATOR
We've chosen to show the sequencer and arpeggiator here – normally it would be the keyboard – but here's where you select them

SEQUENCER STEPS
Very easy to program steps by note or in real time and there are plenty of random and play modes, velocity editing, and other features thrown in for programming

COMPUTER MUSIC PERFORMANCE Award

COMPUTER MUSIC VALUE Award

GForce Software Axxess £33

PC MAC

Recreating a classic (though not very obvious) ARP synth with characteristic aplomb. **Andy Jones** gets Axxess all areas...

> In the future, when our children will (or at least should) be taught synth history, the 'ARP' name will undoubtedly make at least one appearance. The Odyssey will definitely take its place as the 1970s alternative to the Minimoog, it's a screaming Rolling Stone to the Minimoog's calmer, more rounded Beatle. The 2600 also deserves a place – the much loved semi-modular as used by everyone from Depeche Mode to Stevie Wonder. But the ARP Axxe? Probably not. This was an oddity (sorry) in that it was basically a cut-down Odyssey, featuring one oscillator. In fact, it featured pretty much one of everything else – filter, LFO and envelope generator – so it could have been considered very much as the cheaper ARP. Not so much an Odyssey, then, more a trip around the corner to your local shop.

Lets party like its 1975

Gforce Software has, of course, already recreated probably the finest Odyssey ever to grace your desktop in the form of Oddity. For its second ARP, it hasn't gone down the obvious 2600 route but chosen the Axxe instead. We'll assume the 2600 is in the works so 'Axxess' might well be something to feed us hungry synth users in the meanwhile, and while it might not be the obvious ARP recreation, GForce has included attractive extras, and also wrapped it all up in a reasonably budget price.

The original synth was a 1975 monosynth but GForce has upped the voice count to six. It's also added its X-Modifiers modulation system – more on this in the box opposite – a sub oscillator, a great vintage knob, sequencer, effects, 350 presets and a top-notch browser to go through them. Of course, all of this begs the question: with so many extras, when does a synth

Only GForce could be so utterly smart and off-the-wall with their synth programming skills

emulation become a totally new synth? But GForce insists that "Axxess retains the warm analogue sound and fundamental architecture at the heart of the original".

Moving onto that sound and while you might be expecting a kind of thinned-out Odyssey, you will be surprised at what Axxess delivers. Sure the amount of classic 1970s synth sounds is second to none. But the extra sub oscillator means that there are plenty of fat basses and quite a few with a lot of movement for more contemporary electronic genres. And on top of the tearing leads, there are quite a few shimmering hits and more atmospheric stabs in there too – many with a lot more subtlety than we were expecting given the apparent simplicity of the synth. Lots of arpeggiations and sequences notch things up a lot, and it's very easy to tweak everything by way of the synth's front panel – complicated this synth is not.

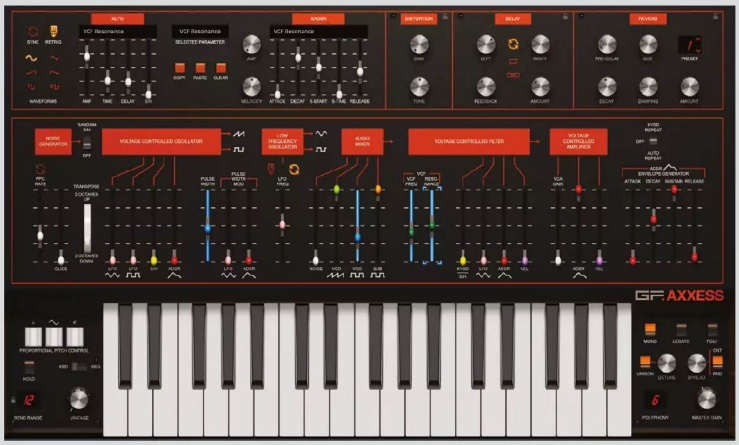
Surprisingly, although maybe not given the extra five notes, are how many astounding pads there are. Audition Brilliant World for some gently evolving, well, brilliance, or Luminous Horizon for some pulsing atmosphere. Indeed these pads could well be the highlight of the synth; only GForce could be so utterly smart and off-the-wall with their synth programming skills to make one of our favourite pad synths one based on a mono.

Overall, the sound of this synth is surprisingly broad and nuanced, then, as the modern extras really do bring a lot to the party. Talking of which, the sequencer/arpeggiator section is also a big bonus with its 16-step sequencer being well-featured and easy to program and inviting hands on performance – the effects also shine in conjunction with it.

An Axxe to fall?

Axxess then, earns its place as a glimmering entry in the GForce canon. It embodies the company's guiding philosophy of "make a great synth sound greater and add loads of new stuff while we're at it". We'd give Axxess an unbridled 'yes', but, if you have Oddity3 then you don't *need* to get this as well. On its own merits, it's undoubtedly another GForce victory. One which we'll be relying on for a long time to come... **cm**

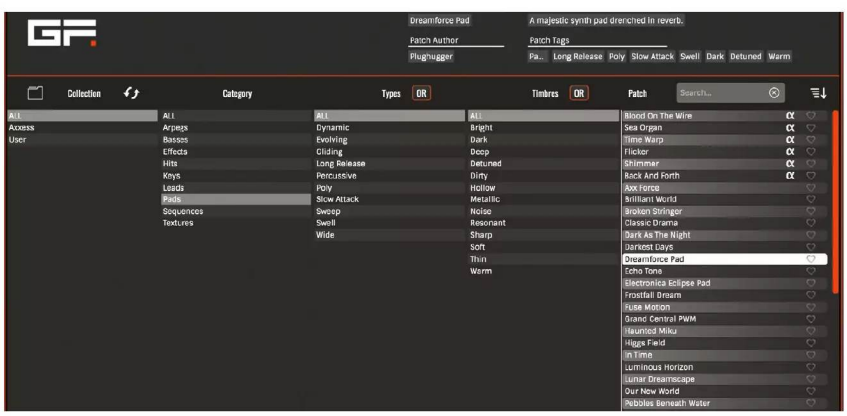
Web gforcesoftware.com



The top panel on GForce Axxess has both X-Modifiers and effects, both of which – alongside the extra polyphony – are the highlights of the synth, bringing 2024 cheese and wine to the 1975 party

Modulation and effect extras

Two of the biggest features in Axxess are the effects and X-Modifiers, both of which are at the top of the main UI, although can be hidden. The effects do make a huge difference to the sound of the synth: the distortion adding grit to what can already be quite a raw sound, the delays some extra thickness and interest, while the reverb is doubtless the one effect that brings in the unexpected atmosphere. However, while it's perhaps obvious what these bring, GForce's X-Modifiers are less obvious but just as important. These are located at the top left of the UI and, as with other GForce synths (like Oddity 3), you get an LFO (XLFO) and envelope (XADSR) which you can apply to pretty much every parameter. Click on the parameter (we've chosen the Resonance slider) and it colours blue. Now push up the Amp slider up on XLFO and the LFO does it's thing to the resonance – easy! These 2024 extras really do update the 1975 synth in many dramatic ways, so are very welcome.



Axxess has 350 presets and GForce has labelled its favourites within a very easy-to-use browser system

Alternatively

GForce Software Oddity 3
£50
The older sibling will demand your money with menace – just like older siblings tend to do

Baby Audio BA-1
$49
Quite a different synth but still with the same attitude, grit and retro feel nonetheless

Verdict

For Surprisingly varied sound
The effects make a big difference
Lots of modulation options
Everything is easy to use

Against Not a lot more gets you the company's Oddity

It's another great ARP emulation from GForce that holds its own in the shadow of its older Oddity sibling, sporting some really beautiful synthetic textures

9/10

COMPUTER MUSIC INNOVATION Award

Antares PC MAC Vocal Reverb £125

From the makers of the infamous Auto-Tune comes a vocal reverb plugin with added AI. Does **Roland Schmidt** believe in reverb love after love?

> It's very rare for a trademarked product to enter the vocabulary, but that's exactly what Antares managed, by accident or otherwise. As we've delved into in this issue's cover feature, the mere mention of Auto-Tune will have even non-producers imagining a type of hard-tuned vocal quality. It's an association far beyond the company's remit of *subtle* pitch correction.

Fast forward 27 years, and the Antares product range has significantly expanded, with echoes of the original product resonating throughout the lineup. Its latest plugin is an excellent case in point. Vocal Reverb does not provide pitch correction, but it does listen to your track and try to assist you with your reverb choices. Still, do we really want AI to tell us which reverbs to use on a vocal track?

Tracking the 'verb!

We started by loading up a vocal stem and applying the Vocal Reverb plugin. Intrigued by the Assist button, we gave it an immediate press, and after only a few seconds of listening, the plugin identified the register of the incoming vocal audio, suggesting its input type/register and asking a series of questions relating to stylistic and sonic preference. These questions are simple enough; did we want a vintage plate, tight room, concert hall or cosmic? What size of room did we prefer? And did we want a tone that was bright, natural or dark?

A second page of questions follows; these questions really piqued our interest, with regards to more creative diversification. Did we want a gritty sound, or an '80s colour? There was even questioning relating to shifting the pitch up or down an octave. The resultant reverb, which can be previewed before applying, was impressive but not entirely what we were

It's a total powerhouse for creativity, as we discovered for ourselves very quickly

looking for. Not a problem though, it appears, as you can override any of these settings at any stage, which possibly underlines the strength of the plugin. It can provide you with some very helpful suggestions, but if they don't quite fit the bill, you can noodle until you are happy.

The relatively large GUI follows a logical signal path, so making adjustments is easy on the eye, and the ear. Even with all of the AI magic in the world, what most readers will really want to know is how it sounds, and the quick and easy answer is: impressive. From the main plugin window, it's quite nice to switch reverb styles, between plate, room, and hall settings, while adjusting all of the settings that you would associate with applying reverberation, such as pre-delay, room, size, damping, mix, and much more. It's easy to hear why Vocal Reverb nails its remit to the mast, and that's because it sounds very good on vocal tracks. It can sound crisp and clear, or be placed on the back burner, to shore up vocal lines, without the reverb tail getting in the way.

What, no instruments?

However, there is a nagging doubt that by calling this plugin Vocal Reverb, it might put off producers who work in the instrumental realm. Let's make no bones about it, this is a highly creative plugin, with enormous capacity that extends way beyond vocal usage.

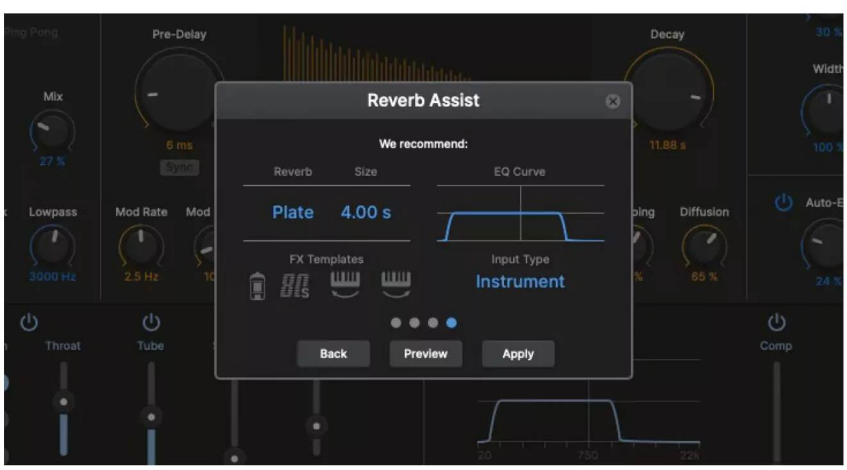
Apart from the reverb elements, you will also find onboard EQ, pitch shifting, reverse gate and a back-end compressor. It's a total powerhouse for creativity in musical projects, as we discovered for ourselves very quickly when we started to apply it to other acoustic and synthetic instruments. On this basis, whatever your production style, you would be foolish to ignore the strengths that this plugin has for experimentation purposes; whether you're working in the realms of vocal manipulation or otherwise! **cm**

Web antarestech.com
Info Available as part of the Auto-Tune Unlimited subscription for £14.25 per month

Choose a room or a plate, and a tone and a size

The added extras

The curious thing about Vocal Reverb (apart from the fact that it's an incredibly respectable reverb, which sounds impressive on vocals) is that its versatility lends itself to creativity on so many levels. Sure enough, it provides many enhancements to a vocal signal beyond reverberation. With an in-built delay and pitch shifter, creating thick vocal textures is both easy and rather unique, while the post-reverb Tone Shaper EQ is equipped with filtering, to sculpt the output perfectly. Transport these functions to other instruments or synths, and you really do have quite a creative effect plugin, which extends way beyond the perceived remit. We even had Vocal Reverb providing a sub-tone to a bass synth, and while there was a small degree of perceptible latency in the signal, it nevertheless added a dimension that was unique. And all of this before we even got to the 45-second reverb tail, available in the Hall reverb setting.



Vocal Reverb is on hand to suggest the perfect reverb criteria

Alternatively

iZotope Neoverb
£95
Another incredibly smart reverb, designed to provide a helping hand in instrument or vocal work

FabFilter Pro-R2
£144
A very high-end reverb; it doesn't offer an assistant, but it does provide a wealth of reverb colour

Verdict

For Enormously versatile reverb plugin
Brilliant for crisp and clean vocal reverbs
Contains 10 additional effects
Curated patch list

Against Its name suggests it's just a vocal reverb. It isn't!

If you struggle to get the perfect vocal reverb, this plugin can provide a useful helping hand to get you going, as well as boost creativity in all forms of production

9/10

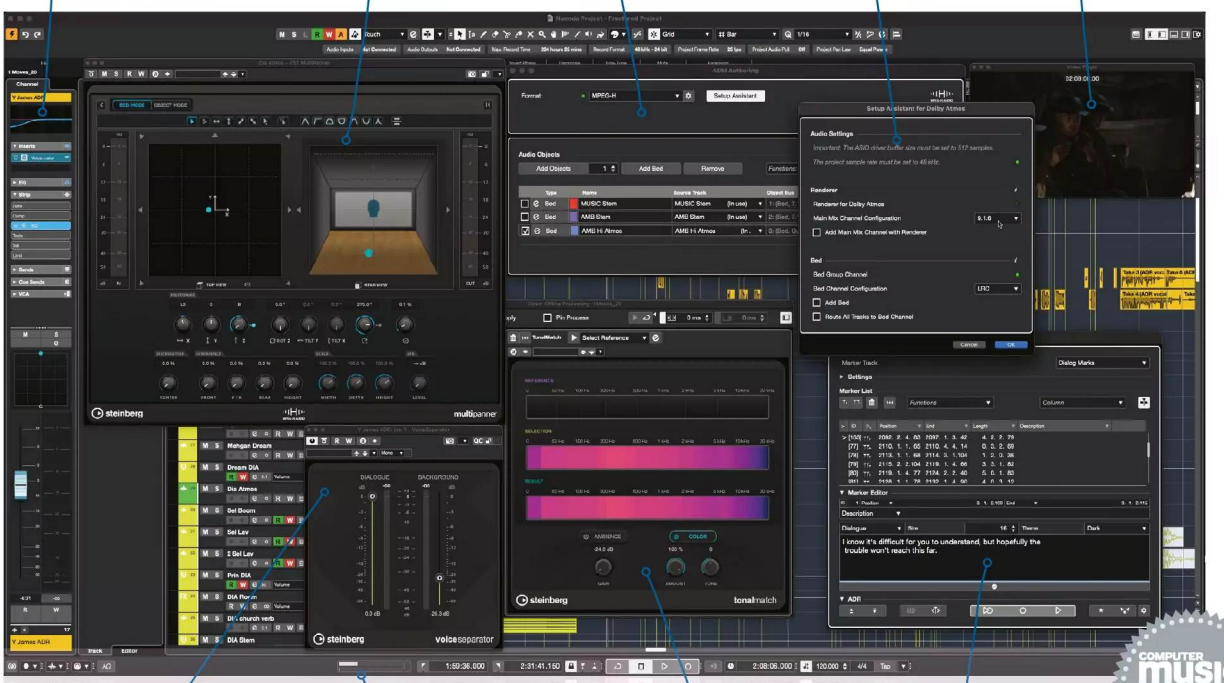
MIX SIDEBAR
The active track's channel strip is accessible from the Project window

UPDATED MULTIPANNER
A new tri-layer Z-pan mode supports MPEG-H Audio

MPEG-H AUDIO
Support for authoring and rendering object-based MPEG-H Audio ADM files

DOLBY ATMOS
Render for Dolby Atmos now supports the 9.1.6 speaker

VIDEO PLAYBACK
Improved GPU use in video playback, plus new Video Track Versions



VOICESEPARATOR
AI-powered realtime and offline rebalancing of dialogue and background noise

MODERN CPU SUPPORT
Optimised for use with more modern CPU architectures such as Apple Silicon

TONALMATCH
Match tone of one part to another quickly and easily

ADR WORKFLOW
Further streamlining of ADR workflow with new ADR Script Reader

COMPUTER MUSIC PERFORMANCE Award

Steinberg Nuendo 13

£859

PC MAC

Like a fine wine, Steinberg Nuendo just keeps getting better with age, says **Stuart Adams** – if only we all could look so good after 24 years!

> Nuendo has always been an advancement of its stablemate, Cubase Pro, the only obvious *visual* difference being the program icon and name shown on window titlebars. This close relationship means that Nuendo 13 includes all of the updates and additions found in the recently released Cubase Pro 13... that's a lot of updates. We aren't going to be looking at those here, but you can find a full review on our sister site *MusicRadar* if you're looking to find out about those very significant new features.

Dealing with dialogue

Much of the audio post production workflow for film projects centres around dialogue, and this is where many of Nuendo 13's most significant updates are being focussed. The Detect Silence tool now allows the background noise between spans of dialogue (or other audio) to be separated, as opposed to being discarded completely. This makes further editing easier, especially when there are sounds and events in the background of the source recording that you might have been wishing to maintain in the finished mix.

There is also an all-new AI-powered VoiceSeparator tool for adjusting the balance between dialogue and background noise. We've seen such tools before, and it's a trick the included (and improved) Steinberg SpectraLayers has been able to pull off for a while now, but what's notable here is that VocalSeparator can run as a VST plugin as well as an offline process. This lets you hear immediately the impact of any settings changes you make, and keeps the dialogue/background balance tweakable all the way through to the final export of your mix.

ADR (Automated Dialogue Replacement) is the post-production process of replacing dialogue recorded on set/location with cleaner audio recorded in the studio. Nuendo's mature workflow in this area has been boosted by the new ADR Script Reader that includes a built in web server that allows any computer or device on the same LAN to access the ADR session's scripts and other info. All updates and changes to the scripts are synchronised to all users instantly, sidestepping the need to print and circulate paper scripts, or manage and sync script files.

A very significant and very well executed update to this remarkably powerful production platform

Matching the tonal characteristics of ADR recordings with the original location recordings (or, indeed, vice versa) can be a painstaking and frustrating process, but not for Nuendo 13's TonalMatch offline processor. This imprints the tonal characteristics of one recording onto another, and is both a much simpler and more precise task than endlessly fiddling with a stack of EQs would be.

Professional yet accessible

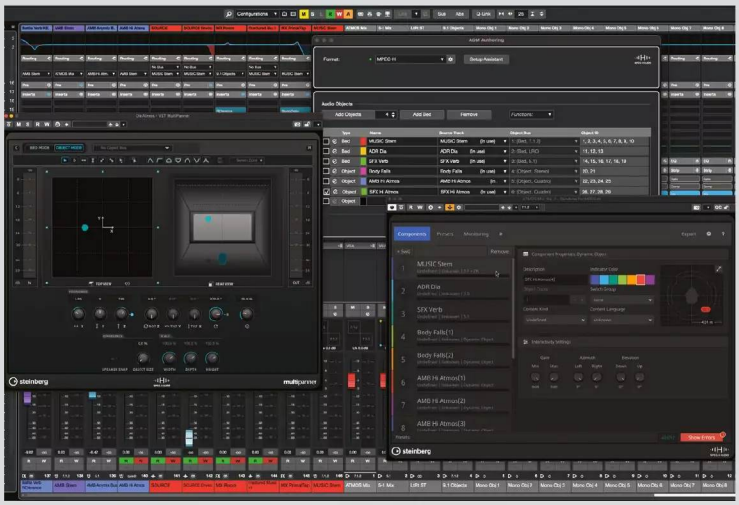
Nuendo itself is now smoother when dealing with any project that includes video, with improved support for modern CPUs (ie Apple Silicon), and a video engine that makes more use of the system's GPU. The video track itself now supports Track Versions, especially useful if working on promo films that often require various different length versions of the same project. Such projects are easier to audition too, thanks to Nuendo's newfound ability to replace the soundtrack in an MP4 file without needing to re-render the video track.

Despite the focus on post production, none of the new updates detract from Nuendo's suitability as a music-making and sound design platform. The DAW's advanced tools are perfectly honed for use in high-pressure, tight-deadline production environments, yet these pro-grade tools are within reach of music producers and the growing cadre of small-budget content creators.

There are, of course, many other changes and tweaks that accompany the headline updates that we've mentioned. These, taken together and bundled with the extensive updates shared with Cubase Pro 13, add up to an extremely significant and very well executed update to this remarkably powerful audio production platform, and present fascinating possibilities for the more adventurous and explorative producer. **cm**

Web steinberg.net
Info Updates from £171; crossgrades from £386

Nuendo looks almost identical to Cubase, but adds a stack of pro-grade tools to that solid foundation



Support for MPEG-H authoring and rendering adds a second object-based surround format to Nuendo's arsenal

Immersive audio

Nuendo has supported surround mixing since inception. Dolby Atmos support was added in v11, allowing channels and busses to be handled as beds and objects in a 3D soundstage, and for the results to be rendered natively into a finished ADM file (ADM being a data-encoding technique that multiplexes discrete channels into a single stream). The Renderer for Dolby Atmos in Nuendo 13 brings support for the 9.1.6 speaker configuration (increasingly found in cinemas). Perhaps more important is the all-new support for MPEG-H audio. This has similarities to Dolby Atmos, handling audio as objects within a 3D scene and recreating that scene accurately, no matter the listener's speaker configuration, but adds an extra vertical layer allowing sounds to come from below the listener. This is supported by a new 3-layer Z-panning mode within Nuendo's 3D panner. Also, new response curves for Headphones Match help maintain an accurate soundstage when working with a surround project in downmixed stereo.

Alternatively

Steinberg Cubase Pro 13
£497
Steinberg's veteran music production platform remains as fresh today as at its 1989 launch

Avid Pro Tools Ultimate
$99/month; $599/year
A powerful choice for both music and post production, but with a costly subscription-only model

Verdict

For Caters for a wide range of settings
Integrates fully with Cubase Pro 13
MPEG-H Audio authoring and rendering
Time-saving dialogue editing tools
Improved ADR workflow/collaboration

Against Where's the kitchen sink?

Whether music producer, sound designer, or file post production engineer, Nuendo has the tools to deliver pro results with minimal fuss

10/10

Soundware round-up

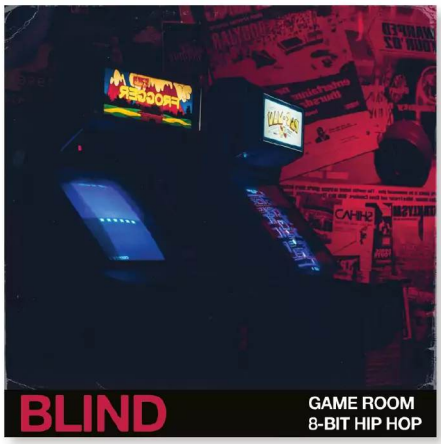
BHK Samples
Premium: DnB & Jungle Breaks £29.95

For this one, real drummers play nothing but fast and furious funk breaks, only to chop and edit them up to make the punchiest, most authentic-sounding, old-school live jungle drums. Think back to those iconic '70s beaks from the James Brown stable that producers dug for; each perfectly captured recording then runs through a high-end chain of processing effects to make a unique library of drums.

It's a fantastic toolkit of beats, perfect for adding that classic 'vinyl-sampled drums' style to your tracks.

loopmasters.com

8/10



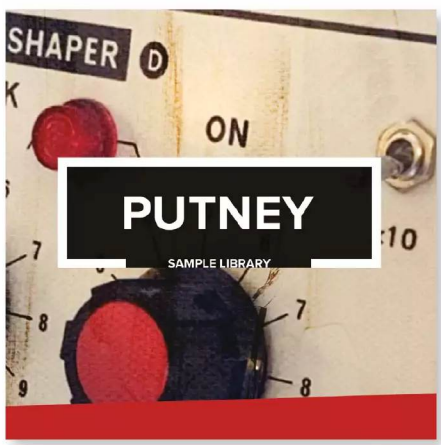
Blind Audio

Game Room: 8-Bit Hip Hop £4.95

Bleeps and bloops from a bygone era, given a power-up for button-bashing beatmakers with a taste for the 8-bit sound. There are basslines with byte, retro melodies to make you misty-eyed and enough crunchy drums and hits to knock out any end-of-level bosses. Presented across three cool chiptune workouts, these files work like a charm together, but are more than happy to be pulled apart for their own side quests in your productions. And everything was made using real old gaming audio algorithms, so it has that 'arcade cabinet' quality.

loopmasters.com

7/10



Audiotent

Putney £22

The EMS VCS3 aka 'The Putney' is an iconic vintage analogue monosynth, noted for its expressive, flexible tones and timbres. If you're lucky enough to have one (without woodworm), you'll know all about its track-piercing clarity and warmth. If you don't have the shelf space, or seven grand to bag your own, this little library of 400+ of wet and dry loops from the synth is the next best thing.

audiotent.com

8/10

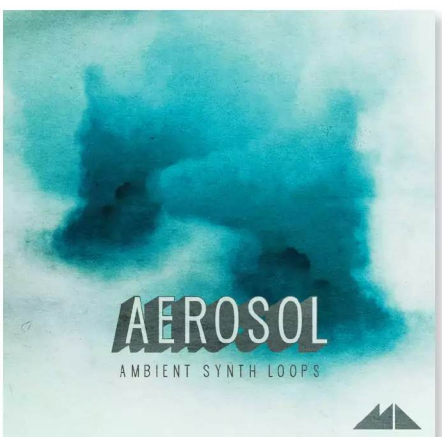
Minimal Audio

Liminal $10

Let's get Liminal, Liminal. Let me hear your body talk, as you pull the best bits from this sample pack for your own DnB productions. The suite of 140 loops and one-shots tucked away in this budget-conscious collection are a rich and rewarding listen, with tough drums and heavyweight basslines pricking the ears first. Pieced together by German producer Tom Finster, the pack showcases his broad, sweeping electronic influences. It makes for a great set of emotionally charged, melodic loops.

minimal.audio

7/10



ModeAudio

Aerosol £18

An endless, undulating parade of ambient synth loops, pitch perfect for placing atop your most luscious loop landscapes. The melodies and sounds presented in this curious collection cover the pure and blissed-out as well as the more noisy end of tonal texturing. There's also a wealth of everlasting bass rhythms, synthy top workouts, and FX and percussion grooves, with all the billowy, cloud-like sounds built to shift the foundations of your tracks.

modeaudio.com

8/10

SoundGhost

Glaciogenica: Ice Foley £15

Swiss ice cave sample pack alert! Huge, sonically unique structures of natural wonders are miked up to hear what wondrous sounds hide within. Ghostly whispers play off the walls in this collection, as glacial creeks and groans add drama and crisp, chilly waters play underneath.

Meticulously captured by ambient artist Ghost In The Loop for his own work, the otherworldly sounds have been blended with digital synthesis and effects for further funky alienation. Cold as ice!

soundghost.net

7/10

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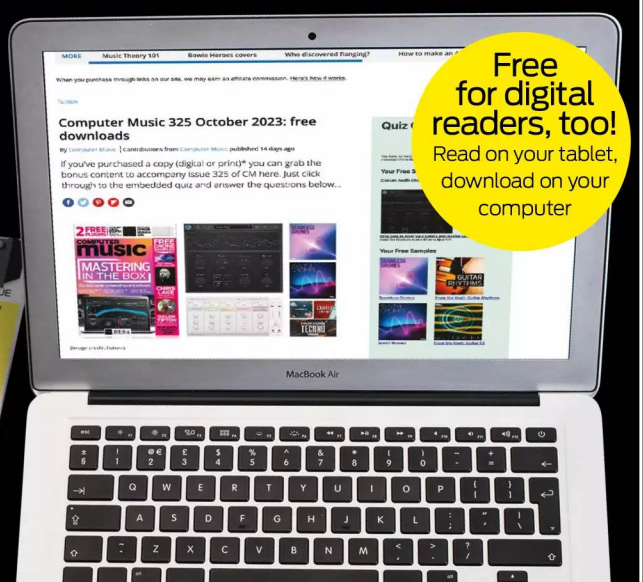

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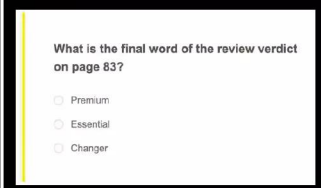


02 Click 'Start Quiz' and you'll be asked a series of three randomly generated security questions to check that you've bought the magazine. You can now download the content

03 If you enjoyed that issue, you can still purchase our back issues via **bit.ly/pocketmags–cm** and downloads for those will be kept at **filesilo.co.uk/computermusic**

cm/video

Download this month's videos: **bit.ly/cm334downloads**

INPHONIK RYM2612

Watch as we explain how to use this chiptune-style softsynth. Yours free this issue!

Read the full article from p14

cm/experts

Our resident music production gurus walk you through their specialist field every month

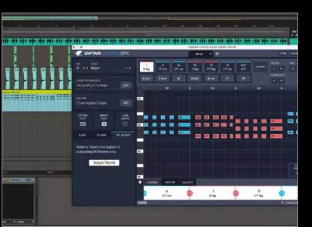
CM TOOLS MASTERCLASS

SEQUENCER-BASED DRONE

Read the full article on p44

DANCE MUSIC MASTERCLASS

CLASSIC DANCE SOUNDS



Read the full article on p52

MIX MASTERCLASS

UNDERSTANDING EQ

Read the full article on p56

Download all assets for this issue at **bit.ly/cm334downloads**

Chilled keys and dub

This month we're building up our bedrock of chilled-vibed samples with a lush keys selection, and our new dub pack will fit well in any delay-heavy project

The Dub Remix Toolkit

With a handmade, DIY approach, Robbie has crafted some seriously hypnotic dub-based sounds for you this month...

"Essentials to throw into a dub remix for a classic tone. Heavily filtered and phased tape delays and spring reverbs are slung on guitar chops, organ and piano lines, and drums. No bass – that joy is left to you. As well as choppy loops, all with plenty of decaying dotted 1/8ths and boinging springs, there are instrument chord hits (guitar and keys) and some sidestick/hi-hat one-shots, all doused with obligatory spring reverb and high/band-passed filters to keep the bottom end ready for all that dubby bass. The 'dubs', ie the delays, were all made by hand, muting the source and spinning the delay feedback as well as the input filter as the echo was in action. There's nothing quite as enjoyable as a proper dub twiddle on the controls."

More detailed info on the making of this pack can be found in Robbie's PDF in the sample folder

SELECTED GEAR

Little Labs Redeye 3d DI/reamp
Radial X-Amp reamp
Focusrite ISA 828 preamps
JDK Audio R24 dual EQ
ART ProVLA valve compressor
Eventide ModFactor
Pioneer SR-202W spring reverb
Danelectro Spring King spring reverb pedal
UAFX Starlight Echo Station delay pedal
Fairfield Long Life EQ/Filter pedal
Fender Stratocaster
Squier Telecaster Custom P90
(+ more listed in Robbie's PDF)

Chilled Keys

Oli has twinkled us up some swirling and evocative key parts that should add a touch of relaxed warmth...

"And... relax. We've chilled out this month and brought you some laidback and relaxed keyboard sounds. Although we used both the Prophet and JU-06, we've leant heavily into softsynths and pianos. We have a soft spot for NI's collection of pianos, especially the Una Corda (and its onboard effects and processing tools) that really allow some drastic (or subtle) sculpting of its tone. Coupled with a dollop of reverb and delay, you can get some deep, chilled, or atmospheric piano tones.

"The glassy, cool tones of FM synthesis work well for some relaxed sounds and using both the Volca FM and NI FM8 brings both hardware and software to the table. We couldn't resist some Juno strings courtesy of the JU-06A, as well as some 106. We also heavily employed the chord mode in order to integrate some classic, fat, chilled Juno vibes."

SELECTED GEAR

Roland JU-06A
Sequential Prophet Rev2
Korg Volca FM
Waves electric grand
Native Instruments' The Gentleman, The Grandeur and Una Corda
NI FM8
Logic Alchemy
Valhalla Super Massive
Various other software synths and FX

FROM THE cm VAULT

Classic samples
Psychedelic samples

Here's the outcome of our cosmic quest beyond the veil of reality in the form of two recent (but still, 'classic'!) sample packs...

Psychedelidrone

Robbie at Cyclick Samples opened the doors of perception with his exemplary array of spaced-out drones...

"This sample pack goes late-stage hippy, a blend of acid/space rock and festival drone. The guitars are soaked in phaseshifters, flangers and wah-wah, the drums are open and verby. There is also the unavoidable Mellotron, itself bathed in phase, Leslie rotary speaker and spring reverb. There are two loop/instrument kits that split into two tempos each. These are made up of drums, bass, rhythm and lead guitars and a keyboard.

"The guitars and keys also feature in the One Shots folder as sets of chords and, in the case of FuzzWahLead, two-string bends. Other loops are provided by triple-tracked guitar which drone different voicings of a chord into three different effects: a phaser/flanger chain, heavy tape treatment and chained echoes. There is also a folder of one-shot chords from the same setup. Turn on, tune in and drone out. Best enjoyed with flares, crushed velvet and plenty of paisley."

SELECTED GEAR

Vox V847 and 1900
Jen KPS-900 Phase Shifter
Carlsbro Flanger
UAD plugins
Soundtoys plugins
Eventide plugins
LiquidSonics Seventh Heaven and Lustrous Plates

Psychedelic Dub

Oli decided to plump for a more dubby approach to our far-reaching journey into oddness...

"We've taken core elements of '60s psychedelic and '70s dub and mashed them!

"On the psychedelic side, we created reverse loops from guitar, piano and synths. The Backmask plugin is fab for random motion within the loop. We also used Make Noise's Morphagene Eurorack module to reverse, pitch and morph various samples. To add to the groovy chaos we ran it through our trusty Space Echo for added delay; it needs a new tape so the delay textures are dense and dark which we quite liked.

"For the dub side, we manipulated the open springs of a couple of reverbs via Music Thing Modular's Spring module. We also fed some drum sounds through a couple of our spring reverbs for dubby percussion hits. The Frontline X-4 is a filthy delay and chorus/flanger from the '80s. The dub siren sounds are from a couple of Korg Monotrons fed through an old Line-6 Echo park stereo delay."

SELECTED GEAR

Frontline X-4
Roland RE-150 Space Echo
DR stereo spring reverb
Great British spring reverb
Music Thing Modular Spring module
Doepfer LPF
Make Noise Soundhack Morphagene Eurorack module
Moogerfooger ring modulator
Korg Monotron and Monotron Duo
Line-6 Echo Park

Download all assets for this issue at **bit.ly/cm334downloads**

Loopmasters

Loopmasters **cm**334 samples

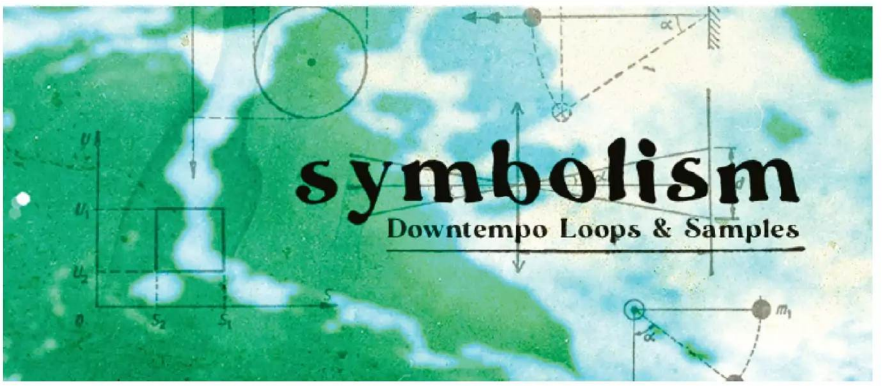
This month's demo sample selection highlighting Loopmasters' latest releases

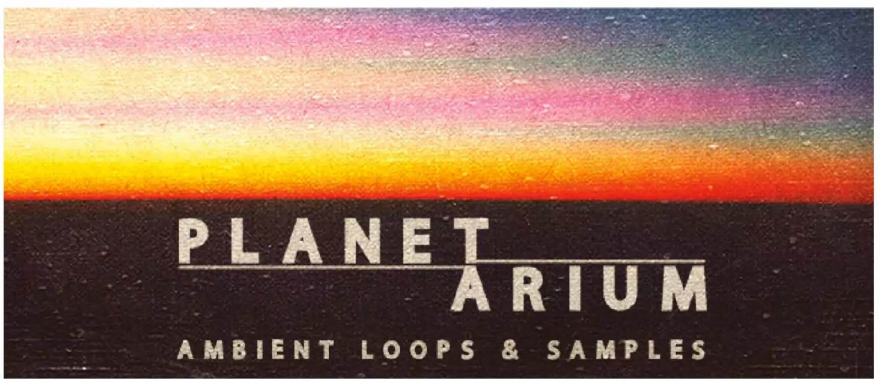
01 **21STRXXT** Trilltape Phonk Vol. 1
02 **Ghost Syndicate** Tarantula Deep Riddim
03 **Deeperfect** Vito (UK)
04 **Loopmasters** Habischman: Analog Senses
05 **Rewind Samples** Exile Drum&Bass
06 **RV** Uncharted Trip-Hop

MODE AUDIO

ModeAudio cm334 samples

Guest samplists ModeAudio have provided another showcase of their fabulous releases this issue, including Bloom, Diffraction, Open Sky and much more. For details on each pack, see the folder within the downloads section





Next issue

How to manipulate and bend time...

In our next issue we're going to show you how to craft and deploy time-based effects such as stutter, reverse, half-time playback, pitchbending and beyond, simply and effectively. We'll also arm you with a very cool gift to aid you in your time-traversing trip!

PLUS!

Kasbo
The DJ and producer on his creative and technical ethos

Free samples
Time to get epic with some sci-fi-leaning samples plus strings!

On test
Korg Gadget 3, Arturia Pigments 5 and more...

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